

GV-S50E

SERVICE MANUAL

AEP Model
UK Model



VIDEO
WALKMAN

A MECHANISM

For MECHANISM ADJUSTMENTS, refer to the
"8 mm Video MECHANICAL ADJUSTMENT
MANUAL IV" (9-973-199-11).

SPECIFICATIONS

System

Video recording system Rotary two-head helical scanning FM system
Audio recording system Rotary head, FM stereo system
Video signal CCIR system B, G, H, and I, PAL colour, CCIR standard
Usable cassettes 8 mm video format cassettes
Tape speed SP: approx. 2.0051 cm/sec.
LP: approx. 1.0058 cm/sec.
Recording time SP mode: 1.5 hours
LP mode: 3 hours
(with Sony P5-90 cassette)
Playback time SP mode: 1.5 hours
LP mode: 3 hours
(with Sony P5-90 cassette)
Fast forward/rewinding time Approx. 8 minutes
(with Sony P5-90 cassette)

LCD section

Picture 4 inches measured diagonally
8.2 × 6.2 cm (3 1/4 × 2 1/2 inches)
On-screen display TN LCD/TFT active matrix method
Total dot number: 89,856 (384 × 234)

Inputs/outputs

VIDEO/AUDIO input/output Selectable automatically according to the operation
Video input Phono jack, 1 Vp-p, 75 ohms, unbalanced, sync negative
Video output Phono jack, 1 Vp-p, 75 ohms, unbalanced, sync negative
Audio input Phono jack, -7.5 dBs (0 dBs=0.775 Vrms), input impedance more than 47 kilohms
Audio output Phono jack, -7.5 dBs (330 mV) at load impedance 47 kilohms, output impedance less than 10 kilohms
Speakers 7.2 ohms, 200 mW
Phones Minijack, 8 ohms
Ⓜ REMOTE (LANC) Stereo mini-minijack

General

Power requirements Battery mounting surface input: 6.0 V (battery pack), 7.5 V (AC power adaptor), 6.5 V (DC pack DCP-77)
Power consumption 6.8 W (for continuous playback)
Operating temperature 0°C to 40°C (32°F to 104°F)
Storage temperature -20°C to 60°C (-4°F to 140°F)
Dimensions 148.5 × 83 × 127 mm (w/h/d)
(5 7/8 × 3 3/8 × 5 inches)
Mass Approx. 980 g (2 lb. 3 oz.) not including battery pack
Accessories supplied Battery pack NP-55H (1)
AC power adaptor AC-S10 (1)
Stereo earphones (1)

AC-S10

Power consumption 20 W
Power requirements 100-240 V AC, 50/60 Hz
Output voltage DC OUT: 7.5 V, 1.6 A in operating mode
Battery charge terminal: 10 V, 1.3 A in charge mode
Operating temperature 0°C to 40°C (32°F to 104°F)
Storage temperature -20°C to +60°C (-4°F to 140°F)
Dimensions Approx. 72 × 39 × 141 mm (w/h/d)
(2 7/8 × 1 9/16 × 5 5/8 inches) including projecting parts and controls
Mass Approx. 330 g (12 oz.)

Design and specifications are subject to change without notice.

Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

List of Recommended Accessories

	Model Name	Page
Battery pack	NP-66H, NP-77H, NP-77HD	12
Battery charger	BC-S10, BC-77	12
Car battery charger	DC-S10	16
DC pack	DCP-77	16
Connecting cord	VMC-810ES/820ES (1 m/2 m)	32, 34 35, 36, 38, 39
Cleaning cassette	V8-25CLH	40



8 VIDEO RECORDER/MONITOR
SONY®

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>	<u>Section</u>	<u>Title</u>	<u>Page</u>
1.	GENERAL		3-3.	Video (1) Block Diagram	25
	Overview of the GV-S50E	4	3-4.	Video (2) Block Diagram	29
	Location of Parts and Controls	4	3-5.	LCD Block Diagram	32
	Power Sources	5	3-6.	Servo Block Diagram	35
	Playing Back Tapes	7	3-7.	System Control Block Diagram	39
	Setting on the Menu Screen	9	3-8.	Mechanism Control Micro Processor (IC101 on MA-165 Board: CXP80624A) Pin Functions	43
	Recording a TV Program	10	3-9.	Mode Control Micro Processor (IC201 on MA-165 Board: MB89092) Pin Functions	46
	Editing Tapes	11	3-10.	Interface	49
	Connecting Other Video Equipment	12	3-10-1.	System Control – Video and Audio Block Interfaces (MA-165 Board)	49
	Maintenance	13	3-10-2.	Mechanism Control – Servo Block Interface (MA-165 Board)	51
	Using Your Video Recorder/Monitor Abroad	13	3-11.	Audio Block Diagram	53
	Warning Displayed on the Screen	13	3-12.	Power Block Diagram	59
2.	DISASSEMBLY		4.	PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS	
2-1.	Removal of Cassette Compartment Lid Assembly and LS Lid Assembly	14	4-1.	Frame Schematic Diagram	61
2-2.	Removal of Side Cabinets (L, R) and JK Block Assemblies (JK-86 Board)	14	4-2.	Printed Wiring Boards and Schematic Diagrams	64
2-3.	Removal of Lower Cabinet Assembly	15		• RP-152 Board	65
2-4.	Removal of SC Block Section	15		• MA-165 (Video, Servo/System Control, Relay/Power) Board	71
2-5.	Removal of SC Block Assembly	16		• MA-165 (Video) Board	75
2-6.	Removal of VR-39 Board	16		• MA-165 (Servo/System Control), FU-109, PE-13 Boards	82
2-7.	Removal of Color Liquid Crystal Display Module	17		• MA-165 (Relay/Power), FP-621, HP-84, JK-86 Boards	89
2-8.	Removal of PE-13, RG-26, RP-152, HP-84 Boards	17		• RG-26, VR-39, LA-22, LA-23 Boards	95
2-9.	Removal of AU-147 and MA-165 Boards	18		• AU-147 Board	101
2-10.	Removal of SL-26 Board	18		• SL-26, FP-442, LM-40, LS-33 Boards	109
2-11.	Internal Views	19	4-3.	Semiconductor	113
3.	DIAGRAMS				
3-1.	Circuit Boards Location	20			
3-2.	Overall Block Diagram	21			

— Continued on next page —

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

- Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
- Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.
- Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
- Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
- Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

<u>Section</u>	<u>Title</u>	<u>Page</u>	<u>Section</u>	<u>Title</u>	<u>Page</u>
5.	EXPLODED VIEWS		8-5.	Video Adjustments	163
5-1.	Cabinet Assembly	114	1.	Playback Frequency Characteristics Adjustment (RP-152 Board)	163
5-2.	Upper Cabinet and SC Block Assemblies	115	2.	Flying Erase Check (RP-152 Board)	164
5-3.	Main Boards Assembly	116	3.	VXO Oscillation Frequency Check (MA-165 Board)	164
5-4.	Cassette Compartment Assembly	117	4.	4.47 MHz XO Oscillation Frequency Check (MA-165 Board)	164
5-5.	LS Chassis Assembly	118	5.	SYNC AGC Level Adjustment (MA-165 Board)	164
5-6.	Mechanism Chassis Assembly (1)	119	6.	IR Adjustment (MA-165 Board)	165
5-7.	Mechanism Chassis Assembly (2)	120	7.	Y/C Separation Adjustment (MA-165 Board)	165
6.	ELECTRICAL PARTS LIST	121	8.	EMPH Y Level Adjustment (MA-165 Board)	166
	HARDWARE LIST	141	9.	DE EMPH Y Level Adjustment (MA-165 Board)	166
7.	MECHANISM SECTION ADJUSTMENTS		10.	PB Y Level Adjustment (MA-165 Board)	167
7-1.	Setting of Track Shift Mode	142	11.	Y FM Carrier Frequency Adjustment (MA-165 Board)	167
7-2.	Preparations for Adjustments	142	12.	Y FM Deviation Adjustment (MA-165 Board)	168
7-3.	Processing After Operations	142	13.	Chroma Emphasis fo Adjustment (MA-165 Board)	168
8.	ELECTRICAL ADJUSTMENTS		14.	REC Y Level Adjustment (MA-165 Board)	169
8-1.	Preparations Before Adjustments	143	15.	REC C Level Adjustment (MA-165 Board)	169
8-1-1.	Equipments Used	143	16.	REC ATF Level Check (MA-165 Board)	169
8-1-2.	Connecting the Equipments	143	17.	Quasi Burst Phase Adjustment (MA-165 Board)	170
8-1-3.	Precautions upon Adjustments	143	18.	Delay Burst Phase Adjustment (MA-165 Board)	170
8-1-4.	Setup during Adjustments	143	8-6.	LCD System Adjustments	171
8-1-5.	Alignment Tape	144	1.	fsc Adjustment (RG-26 Board)	171
8-1-6.	Input/Output Level and Impedance	145	2.	EVR Initial Data Input	171
8-1-7.	Service Mode	145	3.	G Sub-Bright Adjustment (RG-26 Board)	172
1.	Service mode Setting	145	4.	R Sub-Bright Adjustment (RG-26 Board)	172
2.	Page D Write Protect	148	5.	B Sub-Bright Adjustment (RG-26 Board)	173
3.	Test Mode Setting	148	6.	Contrast Adjustment (RG-26 Board)	173
4.	Emergency code	148	7.	R Contrast Adjustment (RG-26 Board)	174
5.	Emergency mode	149	8.	B Contrast (RG-26 Board)	174
6.	Bit Value Discrimination	149	9.	Delay Adjustment (RG-26 Board)	175
7.	Key Input Check	150	10.	Color Adjustment (RG-26 Board)	175
8.	Key Input Check (A/D Port)	151	11.	R Sub-Bias Adjustment (RG-26 Board)	176
9.	Battery Voltage Check	151	12.	B Sub-Bias Adjustment (RG-26 Board)	176
10.	Mechanism Section Switch, etc. Check	152	13.	RGB Bias Adjustment	177
11.	Mechanism Controller Input/Output Check	153	14.	White Balance Adjustment (RG-26 Board)	177
12.	Mechanism Controller A/D Port Input Voltage Check	153	15.	Character Position Adjustment (RG-26 Board)	177
13.	Tape Top/End Sensor Check	154	8-7.	Audio System Adjustments	178
14.	Individual Operations of Drum, Capstan, and Loading Motor	154	1.	E-E Output Level Check (AU-147 Board)	179
15.	Page D Address List	155	2.	REC Matrix L-R Check (AU-147 Board)	179
8-2.	Power Supply System Adjustments	159	3.	REC Matrix L+R Check (AU-147 Board)	179
1.	Oscillation frequency Check (MA-165 Board)	159	4.	1.5 MHz Carrier Frequency Adjustment (AU-147 Board)	179
2.	Power Supply Voltage Check (MA-165 Board)	159	5.	1.7 MHz Carrier Frequency Adjustment (AU-147 Board)	180
8-3.	System Control System Adjustment	159	6.	1.5 MHz Carrier Level Check (AU-147 Board)	180
1.	EEPROM Date Input	159	7.	1.7 MHz Carrier Level Check (AU-147 Board)	180
2.	Battery End Adjustment	160	8.	1.5 MHz Playback Level Adjustment	180
3.	Battery Down Check	160	9.	1.7 MHz Playback Level Adjustment	181
8-4.	Servo System Adjustments	161	10.	1.5 MHz Deviation Adjustment	181
1.	PAL Switching Position Adjustment (RP-152 Board)	161	11.	1.7 MHz Deviation Adjustment	181
2.	NTSC Switching Position Adjustment	161	12.	Stereo/Bilingual Automatic Discriminator Check	182
3.	CAP FG Duty Adjustment (RP-152 Board)	162	13.	Overall Level Characteristics Distortion Rate Check	182
			14.	Separation Check	183
			15.	Overall Noise Level Check	183
			8-8.	Arrangement Diagram for Adjustment Parts	184

SECTION 1 GENERAL

This section is extracted from instruction manual.

Preliminary

Overview of the GV-S50E

The Video Walkman GV-S50E is an 8 mm video recorder/monitor with a 4-inch LCD (Liquid Crystal Display). Its compact and lightweight design allows you to play back video tapes anywhere and anytime you like.

Only with this video recorder/monitor, you can watch playback pictures of 8 mm video tapes, but, with the TGV-3E tuner timer unit (not supplied) installed, you can watch and record TV programmes anywhere and anytime you like.

A variety of optional accessories or equipment allows you to make the best use of the GV-S50E.

- By connecting another VCR, you can edit video tapes.
- By connecting a video camera recorder (not supplied), you can use this unit as a monitor, and play back the recorded pictures immediately.

Features

- **Easy-to-use Menu screen**
- **AFM Hi-fi stereo for high quality sound***
- **CRYSTAL-CLEAR still/slow picture on LCD**
- **MEGABASS circuit for dynamic bass sound**
- **Playback of tapes recorded in Hi8 video system****
- **Playback of tapes recorded in NTSC format**
- **Remaining battery capacity indication**
Shows you the remaining capacity of the battery.
- **REMOTE terminal**
Allows remote control of this unit by other Sony video equipment.

The GV-S50E uses 8 mm video format cassettes. It records in SP mode (approximately 2.0051 cm/second) and LP mode (approximately 1.0058 cm/second) and can play back in SP and LP modes. The quality of the playback picture in LP mode, however, will not be as good as that in SP mode.

PCM (Pulse Code Modulation) recording/playback, that is, digital recording/playback, is not possible with this unit. The PCM sound recorded with another recorder cannot be played back with this unit.

For using this unit abroad, see page 42.

* AFM Hi-fi Stereo System

On the 8 mm video standard track, the sound is recorded/played back in AFM Hi-fi monaural. The PCM digital stereo sound is recorded/played back on the PCM track as an option. With this unit, AFM Hi-fi stereo sound can be recorded on the standard track.

To maintain compatibility with the conventional AFM Hi-fi monaural equipment, the AFM Hi-fi stereo sound is recorded as L - R sound using the 1.7 MHz carrier and L + R sound using the 1.5 MHz carrier as the FM audio signal.

To playback the tape recorded by its AFM Hi-fi stereo system, this unit uses a matrix circuit to produce the L and R stereo sounds separately. When conventional Hi-fi monaural equipment is used to play back a tape recorded in AFM Hi-fi stereo, it will produce the L + R monaural sound because it can reproduce only the 1.5 MHz carrier.

The AFM Hi-fi stereo system of this unit provides a live stereo sound atmosphere even when using the 8 mm video standard track.

** Hi8 playback

Playback of tapes recorded in SP mode of Hi8 video system is possible on this unit.

- Recording in Hi8 video system is not possible.
- Playback of tapes recorded in LP mode of Hi8 system is not possible.
- High resolution which a conventional Hi8 VCR gives the picture cannot be obtained.
- Noise may appear on the screen during playback.

Menu Screen

You can perform certain operations by selecting them from the menu screen.

The menu appears on the screen when you press MENU. Select the desired item on the menu screen. For more details, see reference pages in the table below.

Menu item	Setting purpose	Reference page
BILINGUAL	To select audio line output for bilingual tapes	20, 27-28
ST MONITOR	To select audio line output for stereo tapes	20, 27-28
SOUND	To obtain dynamic bass sound	21, 27-28
REC MODE	To select the tape speed (SP or LP)	27-28, 30, 32, 34
LINE AUDIO	To select audio line input mode	27-28, 32
PB SYSTEM	To select the playback system	26, 27-28
COLOUR	To adjust the depth of colours	23, 27-28
SLOW TRACKING	To adjust the tracking for still picture or slow picture search	22, 27-28

4

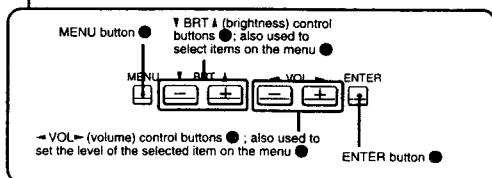
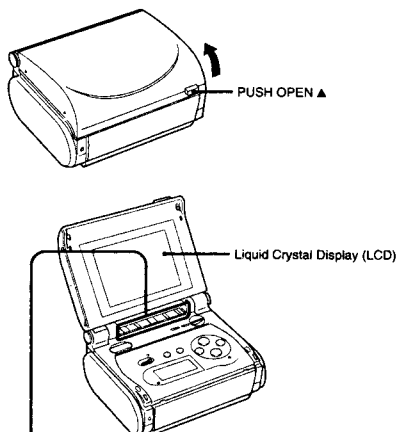
5

Location of Parts and Controls

For details, refer to the pages indicated in ●.

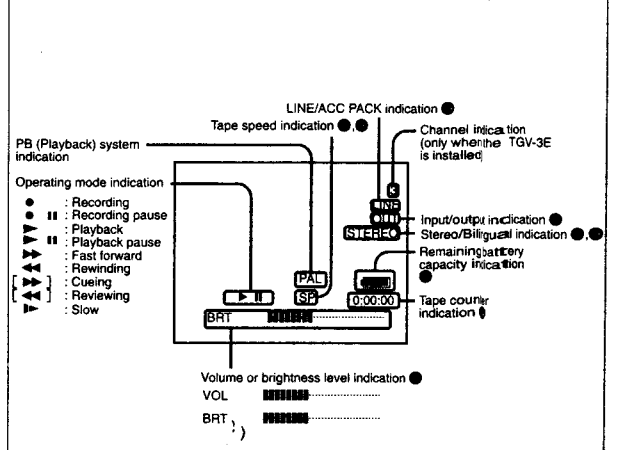
Parts and Controls for Adjusting the LCD and for Using the Menu Screen

Press PUSH OPEN ▲ and pull up the display first.



6

On-Screen Displays



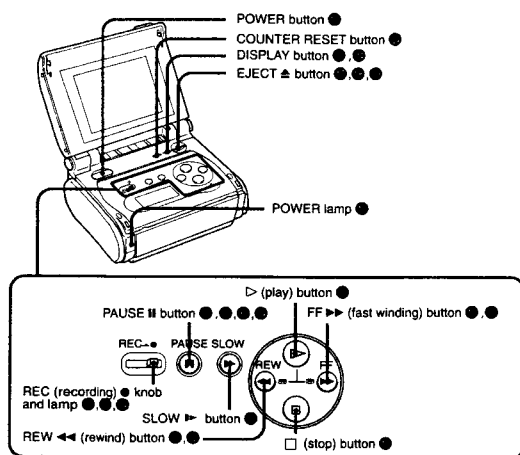
Note

All indications are illustrated as if they were actually displayed at the same time; however some of them are not displayed at the same time.

7

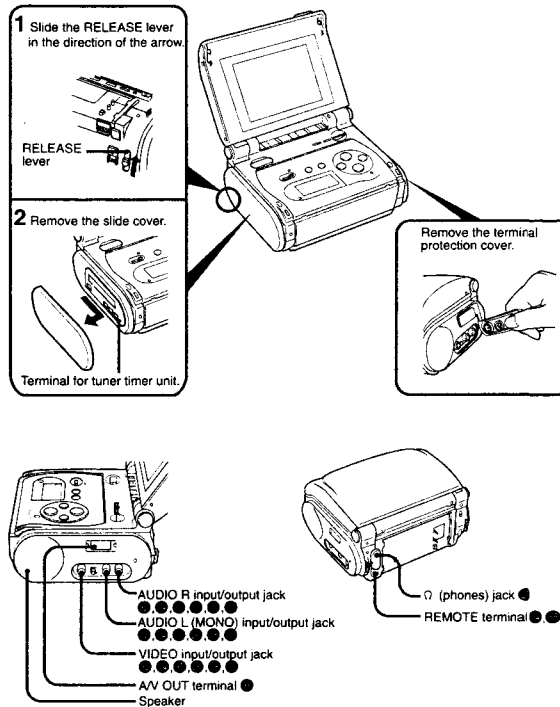
Location of Parts and Controls

Parts and Controls for Playback and Recording



8

Parts for Connections



9

Power Sources

You can select the best power source for your own needs.

Place	Power source	Page
Indoors	AC power adaptor AC-S10 (supplied)	11
Outdoors	Battery pack NP-55H (supplied) NP-66H, NP-77H, NP-77HD	12
In a car	DC pack DCP-77 or Car battery charger/adaptor DC-S10	16

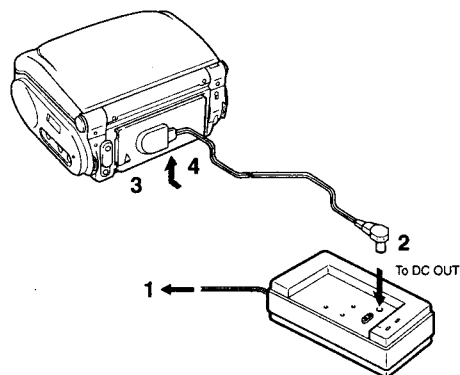
Only the AC-S10 and the NP-55H are supplied; the other accessories for your special needs are available from your Sony dealer.

Disconnecting the power source during recording or playback operations may damage the inserted cassette tape. If this should happen, supply power again immediately and turn on the power.

10

Using a Wall Outlet for Indoor Use

Use the supplied AC-S10 AC power adaptor.



- 1 Plug in the AC power adaptor to a wall outlet.
The POWER lamp (green) on the AC-S10 lights up and the power turns on.
- 2 Insert one end of the connecting cord (supplied with the AC-S10) into the DC OUT jack of the AC-S10.
- 3 Align the upper side edge of the connecting plate with the white line printed on the video recorder/monitor so that the slots of the connecting plate (the other end of the connecting cord) are positioned over the tabs of the battery mounting surface.
- 4 Press the connecting plate and slide it in the direction of the arrow.

To remove the connecting plate

Slide out the connecting plate while sliding the BATT release knob.

- The unit is not disconnected from the AC power source as long as it is connected to a wall outlet.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.

11

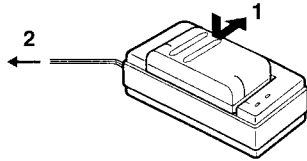
Power Sources

Using a Battery Pack for Outdoor Use

To charge a battery pack.

Before using a battery pack, make sure to charge it first even if it is newly purchased. Beside the supplied NP-55H battery pack, optional NP-66H, NP-77H, and NP-77HD battery packs, as described on page 10, are available.

Use the supplied AC-S10 AC power adaptor to charge a battery pack.



1 Plug in the AC power adaptor to a wall outlet.

The POWER lamp (green) on the AC-S10 lights up and the power turns on.

2 Install the battery pack in the AC-S10.

Align the flat side of the battery pack with the line on the AC-S10. Then push down and slide the battery pack in the direction of the arrow. The REFRESH lamp (red) lights up first and then it goes out. When the CHARGE lamp (orange) lights up, battery charging begins. When the battery is charged, the CHARGE lamp goes out. Unplug the AC power adaptor and the POWER lamp goes out. (Refer to the instruction provided for the AC-S10 as well.)

Required charging time:

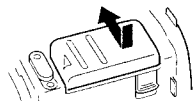
NP-55H (supplied)	NP-66H	NP-77H	NP-77HD
70 min.	100 min.	140 min.	140 min.

(Approx. minutes using AC-S10)

- The battery pack cannot be charged when using the AC power adaptor is used to operate the unit.
- An NP-55H, NP-66H, NP-77H, and NP-77HD battery packs can also be charged with the BC-S10 or BC-77 battery charger.

To attach a battery pack to this unit

Align the upper side edge of the battery pack with the white line printed on this unit so that the slots of the battery pack are positioned over the tabs of the battery mounting surface, and slide the battery pack while pressing it.

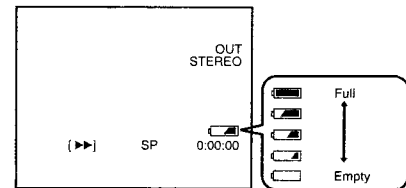


12

To check the remaining battery capacity

When a battery pack is installed, press DISPLAY to show on the screen the remaining battery capacity as well as other indications (see page 7 for more details).

To cancel this display, press DISPLAY again.

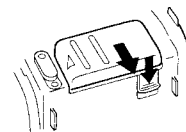


A fully-charged battery pack lasts for:

	NP-55H	NP-66H	NP-77H	NP-77HD
Playback (without TGV-3E connected)	Approx. 60 min.	Approx. 90 min.	Approx. 120 min.	Approx. 120 min.
Recording (without TGV-3E connected)	Approx. 60 min.	Approx. 90 min.	Approx. 120 min.	Approx. 120 min.
Watching TV programmes	Approx. 55 min.	Approx. 80 min.	Approx. 110 min.	Approx. 110 min.
Recording TV programmes	Approx. 50 min.	Approx. 75 min.	Approx. 100 min.	Approx. 100 min.

To remove the battery pack

While sliding the BATT knob in the direction of the arrow, slide out the battery pack as illustrated.



Note

If you use the NP-77HD battery pack which has the battery life indicator, the remaining battery capacity indicated on the LCD may be different from that indicated by the NP-77H battery pack. The indicator on the NP-77HD battery pack is more accurate.

13

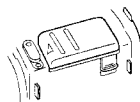
Power Sources

Using the Battery Pack Efficiently

Preparing battery packs

Prepare 2 or 3 times more battery power than you plan to use.

The published battery capacity is measured in a continuously playing VCR at room temperature starting with a fully charged battery. Fast winding or rewinding uses much more power than normal playing. Consequently, battery consumption becomes faster when these operations are performed frequently.



Battery consumption is faster in a cold climate

Cold climates reduce the efficiency of a battery and cause it to run out more quickly.



When to replace battery packs

When a battery pack is fully discharged, the POWER lamp starts flashing slowly. During recording, "BATTERY" also starts flashing on the screen. Replace the battery when the POWER lamp starts blinking rapidly. Turn off the video recorder/monitor power before replacing the battery. Especially during recording, keep the cassette inside the cassette holder while replacing the battery. When a fresh battery is attached, recording can be resumed smoothly without any picture distortion.



Notes on charging

Before using a battery pack, charge it fully. A newly purchased battery pack also needs to be charged before its first use.

Recharge a battery pack only when it is fully used out

Avoid recharging only partly used battery packs. Repeated charging of partly discharged battery packs reduces their capacity and shortens their overall life span. The original capacity can sometimes be recovered by fully discharging and then fully recharging the battery pack.

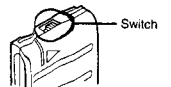
Rechargeable battery packs

Battery pack care

- Remove the battery pack from the video recorder/monitor after use, and keep it in a cool place. When the battery pack is installed on a video recorder/monitor, a small amount of current flows to the recorder even if the POWER switch is turned off. This causes overdischarge and so shortens battery life.
- The battery pack is always discharging a little even when not in use. Thus, the battery should be charged before each use.
- If the terminals (metal parts on the back) are dirty, the battery capacity will be reduced. When the terminals are dirty, or when the battery pack has not been used for a long time, attach and remove it several times. This will improve the contact between the battery pack and the video recorder/monitor. Also, wipe the + and - terminals with a soft cloth or paper.
- If the battery pack is not used for a long time (about 1 year) and you charge it again, the battery capacity will be reduced. After several charging and discharging cycles, the battery will recover its original capacity.

How to use the switch on the battery pack

Use this switch as a reminder of charging. Set the switch to the no-marked position when the charging is completed. Set the switch to the red-marked position when the battery is discharged.



Battery life

A battery can be fully charged and discharged about 500 times under normal temperatures. If "BATTERY" appears just after turning on the recorder, even though a fully charged battery pack has been installed, replace the battery pack with a new one.

Best temperature for charging

A lower temperature requires a longer charging time. Charging under a temperature ranging from 10°C to 30°C (50°F to 86°F) is recommended.

Why a battery pack heats up

While a battery pack is being charged or used, the chemical change occurring inside the battery pack release heat. The battery pack becomes warm, but this is normal and not dangerous.

Warning

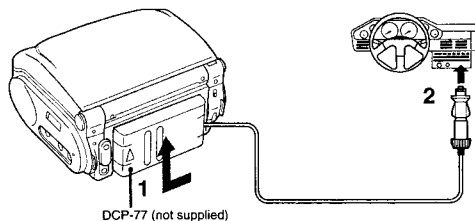
If the + and - terminals are short-circuited with a piece of metal, the battery heats up abnormally. This is very dangerous. Never put an uncovered battery pack in a pocket together with a key holder or other metals.

14

15

Power Sources

Using a Car Battery



- 1 Attach the DC pack to the video recorder/monitor by aligning the upper side edge of the DC pack with the white line on the video recorder/monitor and slide the DC pack in the direction of the ► mark while pressing it.
- 2 Plug the power cord into the cigarette lighter socket.

- Only connect the DCP-77 to a car with a negative ground 12 V or 24 V battery.
- The DCP-55 is not recommended for this unit because its power is not enough to operate this unit.

Notes

- Be careful not to let any metal object touch the metal projection on the battery pack. When the battery pack is not in use, keep it in its case.
- Keep the video recorder/monitor away from any power source. Such sources may cause noise to appear on the screen.

Cautions on using this unit in a car

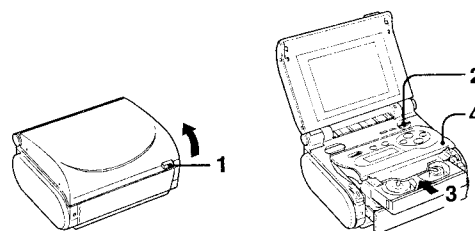
- For your safety, do not watch video tapes or operate the controls while driving.
- Avoid leaving the unit in a place with very high temperatures. If you do, it may cause distortion of the cabinet or malfunction of the unit.
- If you use this unit while the car engine is stopped, the car battery will be discharged. Avoid running this unit from the car battery more than 12 hours without recharging it.
- Remove the car battery cord from the cigarette lighter socket if you do not use the unit for a long time.

Basic Operations

Playing Back Tapes

Make sure that the power source is attached to this unit.

Inserting a Cassette



- 1 Press PUSH OPEN ▲ and open the display.
- 2 Press EJECT ▲.
The cassette holder opens automatically.
Do not open the cassette holder forcibly.
- 3 Insert a cassette with the window side facing up.
- 4 Press the PUSH mark.
The cassette holder closes automatically.

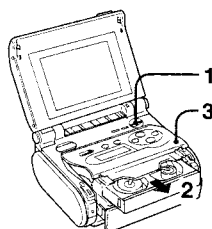
When you press EJECT ▲, power is supplied and the cassette holder opens even if the power is turned off. After the cassette holder opens, the power goes off automatically. Press POWER if you want to continue the operation.

16

17

Playing Back Tapes

Ejecting a Cassette



- 1 Press EJECT ▲.
Make sure the tape is not running.
- 2 Remove the cassette.
- 3 Press the PUSH mark.
The cassette holder closes automatically.

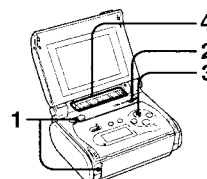
Notes on opening and closing the cassette holder

- Do not insert your finger into the cabinet while the cassette holder is open.
- Be careful not to get your finger caught in the cassette holder.

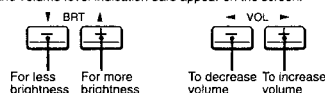
Cassette care

- Store cassettes in their cases when they are not in use and keep them in an upright position to keep out dust and prevent uneven winding.
- Never insert a cassette upside down into the cassette holder.
- Never cover the small holes on the rear of a cassette or insert anything into the holes.
- Remove a cassette from the video recorder/monitor when it is not in use.

Watching Video Tapes



- 1 Press POWER.
The POWER lamp lights.
- 2 Insert a recorded tape. (See page 17.)
- 3 Press ▷ (play).
Playback starts.
- 4 Press BRT +/- and VOL +/- to adjust the brightness and the volume respectively.
The brightness and volume level indication bars appear on the screen.



- | | | |
|--|--|--|
| To stop playback
Press □ (stop). | To rewind the tape
Press REW ◀◀. | To advance the tape
Press FF ▶▶. |
|--|--|--|

If power supply is interrupted

The levels of brightness and volume are automatically set to the centre point on the level indication bars on the screen.

18

19

Playing Back Tapes

To turn off the power to this unit
Press POWER again so that the POWER lamp goes off.

To rewind the tape and play it back automatically — Auto play
Press ▷ (play) while pressing REW ◀◀.

To mute the picture and sound
Close the LCD so that the LCD turns off and that sounds are not heard from the speaker.
To restore the picture and sound, press PUSH OPEN ▲ and pull the LCD up.

For private listening in stereo
Connect the supplied stereo earphones to the □ (phones) jack. No sound will be heard from the speaker.

Selecting Monitor Sound

You can select one of the sound mode listed below, by using the menu screen, while playing back a stereo or bilingual tape.
For details on the procedure to select the sound you hear by "ST MONITOR" for the stereo tape and "BILINGUAL" for the bilingual tape on the menu screen, see pages 27 and 28.

Sound mode

Stereo tape		Bilingual tape	
Display	Sound you hear	Display	Sound you hear
STEREO	Stereo	MAIN	Main sound
Lch	Left channel	SUB	Subsidiary sound
Rch	Right channel	MAIN/SUB	Main and subsidiary sounds

Notes

- If "STEREO" is selected for playing back a stereo tape, stereo effect cannot be obtained through the speaker. It can be obtained only through the stereo earphones and line outputs.
- If "MAIN/SUB" is selected for playing a bilingual tape, both sound come out from the speaker. Then, through the earphones and line outputs, the main sound comes out from the left channel and the subsidiary sound comes out from the right channel.
- For playing back a monaural tape, you can adjust the setting as you like but the sound you hear is always the same monaural sound.

Listening to Stereo and Dynamic Bass (MEGABASS) Sound

You can listen to dynamic bass sound in stereo by using the supplied stereo earphones; however, you cannot listen to this sound through the speaker.

Relation between outputs and sound effects

	Stereo effect	MEGABASS effect
Earphones	Active	Active
Speaker	Inactive	Inactive
Line output	Active	Inactive

To activate MEGABASS Sound

Select "MEGABASS" from "SOUND" on the menu screen. For details on the procedure, see pages 27 and 28.

To inactivate MEGABASS, select "NORMAL" from "SOUND" on the menu screen.

Playing Back Tapes

Various Playback Modes

To stop the tape for a moment — Still picture	During playback PAUSE II ▶ II	To resume normal playback, press ▷ (play) or PAUSE II. This mode will be automatically released and the unit will stop after five minutes.
To view the slow playback picture	During playback SLOW ▶	To resume normal playback, press ▷ (play). (or normal playback resumes automatically after one minute.)
To locate a particular point while viewing the picture — Picture search	During playback REW ◀◀ (◀) FF ▶▶ (▶)	When you release the button, the unit will return to the previous mode.
To view the picture at high speed — FR picture search	While rewinding REW ◀◀ (◀) While fast forwarding FF ▶▶ (▶)	

If streaks appear in slow playback pictures on LCD

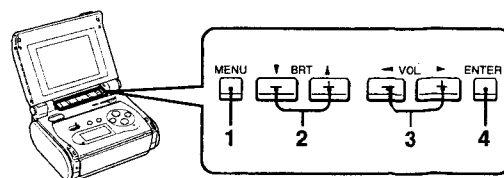
Adjust the pictures during slow playback, by using the menu screen, so that streaks disappear from the pictures. For details on the procedure to adjust "SLOW TRACKING" on the menu screen, see pages 27 and 28.

When the playback picture is viewed on another TV or monitor

The pictures may possibly become black and white or shake vertically in picture search and FR picture search modes. Moreover, noise appears in the still and slow pictures.

Adjusting the Depth of Colours

You can adjust the depth of colours on the menu screen.

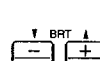


1 Press MENU.

The menu screen appears.



2 Press ▲ or ▼ to select COLOUR.



3 Press ◀ or ▶ to make adjustments.

Each time you press ◀ or ▶, the depth of colours is adjusted as shown below.



less depth ◀ ▶ more depth

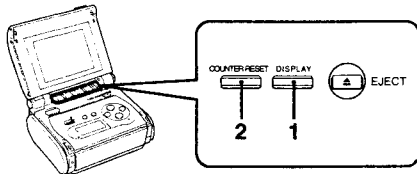
4 Press ENTER.



Playing Back Tapes

Using the Tape Counter

The counter indicates the tape transport in hours, minutes and seconds. During playback or recording, it shows you the playback or recording time.



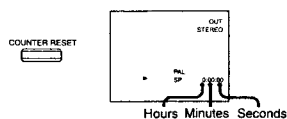
1 Press DISPLAY.

The tape counter appears on the screen.



2 Press COUNTER RESET during playback or recording at the point you want to locate later.

The counter is reset to 0:00:00.



Notes

- When you play back a blank tape, the tape counter does not function.
- The counter reading and the point on the tape may not correspond exactly. Use the counter as a guide.
- The difference between the counter reading and the point on the tape may increase by several seconds in the following cases:
 - after repeated fast-forward and rewinding
 - when playing back a tape recorded both in SP and LP modes
 - when playing back a tape having a blank portion between recorded portions
 - when playing back a tape having PAL-recorded portions and NTSC-recorded portions

Playing Back an NTSC-Recorded Tape

You can play back tapes recorded in NTSC video system using the SP mode (NTSC-recorded tapes) on the LCD of this unit or on the television set (NTSC4.43 or PAL system) connected to this unit. (See page 38 for connecting a television set.) If the tape is recorded in the AFM Hi-Fi system, the AFM Hi-Fi sound is reproduced.

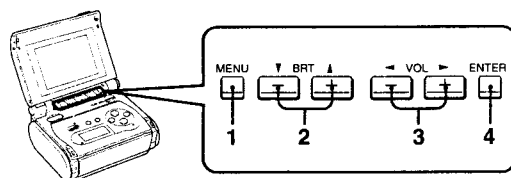
However, note that the following will occur during playback of an NTSC-recorded tape.

- The tape counter display will not appear even if you press DISPLAY.
- Depending on the television set you are using, you may not be able to obtain a normal picture. For example:
 - the picture reproduced on this unit is not synchronized with the television set;
 - the picture shrinks vertically, etc.
- If a tape has portions recorded in PAL and NTSC video systems, the tape counter reading is not correct. This discrepancy is due to the difference between the counting cycle of the two video systems.
- You cannot edit the NTSC-recorded tape onto another VCR.

Television sets on which NTSC-recorded tapes can be played back

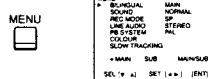
- NTSC system television sets compatible with NTSC4.43 video signals
- PAL system television sets compatible with PAL video signals
- Multi-colour system television sets compatible with NTSC4.43 or PAL video signals

Operation



1 Press MENU.

The menu screen appears. (Be sure to press MENU in stop mode or during playback an NTSC tape. Otherwise, the menu screen may not appear.)



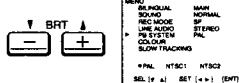
To be continued on the next page

24

25

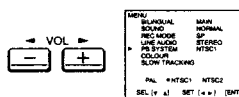
Playing Back Tapes

2 Press ▲ or ▼ to select PB SYSTEM.



3 Press ◀ or ▶ to select NTSC1 or NTSC2.

Each time you press ◀ or ▶, the selected setting changes and is indicated by ●.



When using the LCD

Both settings, NTSC1 and NTSC2, give you a normal picture.

When using a television set connected to this unit

Select the setting, NTSC1 or NTSC2, that gives you a normal picture.

4 Press ENTER.



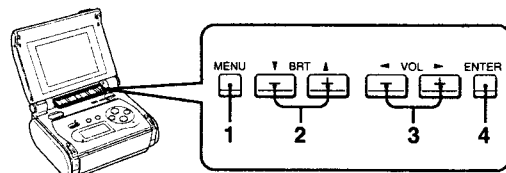
To play back a PAL-recorded tape again
Select "PAL" from "PB SYSTEM".

Settings on the Menu Screen

You can set seven items on the menu screen. You can use this unit with the settings preset at the factory (indicated by ● in the list on page 28).

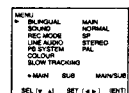
If you want to change the settings, follow the procedure described below.

Operation

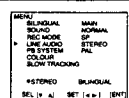


1 Press MENU.

The menu screen appears.

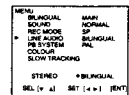


2 Press ▲ or ▼ to select the item to adjust.



3 Press ◀ or ▶ to select the setting you want.

Each time you press ◀ or ▶, the selected setting changes and is indicated by ●.



4 Press ENTER.



Note

You cannot cancel the setting procedure once you start changing the setting.

26

27

Settings on the Menu Screen

Menu Screen List

Items	Settings	Setting purpose	When to use
BILINGUAL	● MAIN	To listen to the main sound	When listening a bilingual tape
	SUB	To listen to the subsidiary sound	
	MAIN/SUB	To listen to both the main and subsidiary sounds	
ST MONITOR	● STEREO	To produce stereo effect	When listening to a stereo tape
	Lch	To listen to only the left channel	
	Rch	To listen to only the right channel	
SOUND	● NORMAL	To inactivate the MEGABASS effect	When emphasizing bass sound
	MEGABASS	To emphasize bass sound	
REC MODE	● SP	To record at normal speed	When recording
	LP	To record at double normal speed	
LINE AUDIO	● STEREO	To receive stereo or monaural sound through the line inputs	When recording through the line inputs
	BILINGUAL	To receive bilingual sound through the line inputs	
PB SYSTEM	● PAL	To play back a tape recorded in PAL format	When playing back tapes recorded in NTSC video format
	NTSC1	To play back a tape recorded in NTSC format on an NTSC4.43 TV set	
	NTSC2	To play back a tape recorded in NTSC format on a PAL TV set	
COLOUR	Level indication bar	To adjust the depth of colour	When the colours of picture are strange
SLOW TRACKING	Level indication bar	To adjust the tracking for slow motion playback picture	When watching slow motion pictures

●: factory setting

* Levels are set on the middle of the bar at the factory.

Note

"BILINGUAL" and "ST MONITOR" never appear on the menu screen at the same time. In stop mode, "BILINGUAL" appears. During playback, either of the two items, "BILINGUAL" or "ST MONITOR", appears according to the type of the played-back tape.

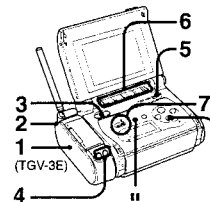
28

Operations with Other Equipment

Recording a TV programme

You cannot watch or record a TV programme on this unit since this unit does not have a built-in tuner. However, if you install the TGV-3E tuner timer unit (not supplied) to this unit, you can watch and record a TV programme. Here's only explanation of how to record a TV programme after connecting the TGV-3E to this unit. For installation, channel preset, channel selection, etc., refer to the instruction manuals supplied with the TGV-3E.

Operation



1 Install the TGV-3E tuner timer unit to this unit, and carry out the necessary settings, such as channel preset, on the TGV-3E. (For more details, refer to the instruction manual supplied with the TGV-3E.)

2 Set the TUNER/LINE selector on the rear of the TGV-3E to TUNER.

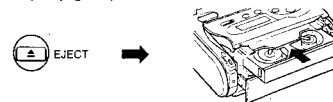


3 Turn on the power of this unit. "ACC PACK" appears on the screen for several seconds.

4 Press CH +/- on the TGV-3E to select the TV programme to be recorded.



5 Insert a cassette. (See page 17.)



To be continued on the next page

29

Recording a TV Programme

6 Select the tape speed ("SP" or "LP" from "REC MODE") on the menu screen of this unit. See "Settings on the Menu Screen" on pages 27 and 28.	
7 Slide REC on this unit in the direction of the arrow. The REC lamp lights and the recording starts.	
To pause recording Press PAUSE II.	To stop recording Press [Stop] (Stop).
To resume recording Press PAUSE II again. If you do not press PAUSE II again within five minutes, the pause mode will be released automatically and the unit will stop.	

When changing the channel while recording

Set this unit in recording pause mode and then select another channel. You cannot watch another programme while recording.

When recording from the beginning of the tape

Advance the tape for about 15 seconds before recording. This will prevent missing the starting point when playing back on another VCR.

When the tape is recorded to the end

The tape stops automatically, but the unit is not turned off. If you are not going to continue operation, turn off the power by pressing POWER.

About recorded sound

Recording level is always fixed automatically.
The VOL +/- have no effect on the recorded sound level.

If power supply is interrupted while recording

Recording stops.

Recording/playback time

Two tape speeds (SP/LP) can be selected on the menu screen (see pages 27 and 28). The recording time in LP mode is twice as long as that in SP mode. For better picture and sound, recording in SP mode is recommended. During playback, the mode in which the tape has been recorded is selected automatically.

Difference in colour systems

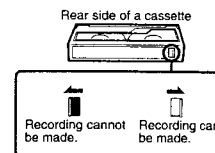
There are different formats of the TV colour broadcast: PAL, NTSC and SECAM. Video cassette tapes are made to correspond to one of these formats. Use PAL format cassette tapes for this unit. You will find "P5" on the package of PAL cassettes.

In some countries, however, only NTSC format cassette tapes with "P6" on the package are available. If an NTSC format cassette tape is used for this unit, the actual recording time may differ from the recording time indicated on the cassette.

To prevent accidental erasure

Slide out the tab on the back of the cassette so that red colour is visible.

To re-record on the cassette, slide the tab back.



Note

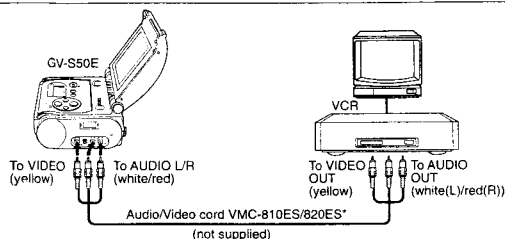
If you record, using this unit, on a tape that has been recorded with PCM sound, and then if you play back this tape on a VCR with PCM function, the sound may be cut off occasionally. If this happens, set the audio monitor switch of the VCR to the standard position.

Editing Tapes

You can edit a tape with the video equipment connected through the VIDEO/AUDIO input/output jacks of this unit.

Editing from Another VCR

Connection



* If the other VCR is monaural type, use the VMC-710EM or VMC-720EM (not supplied). In this case, connect to AUDIO L (MONO) and VIDEO jacks.

Operation

- 1 Turn on the power of both units.
- 2 Insert a source tape into the other VCR (playback) and a tape for recording into this unit (recording).
If the optional TVG-3E tuner timer unit is installed, set the TUNER/LINE selector to LINE.
- 3 Select the tape speed ("SP" or "LP" from "REC MODE") and audio line input ("STEREO" or "BILINGUAL" from "LINE AUDIO") on the menu screen of this unit.
See "Settings on the Menu Screen" on pages 27 and 28.
- 4 Activate the EDIT function* if it is provided with the other VCR.
- 5 Locate the playback start point and press the pause button on the other VCR.
- 6 Slide REC in the direction of the arrow and press PAUSE II on this unit.
This unit is now put in recording pause mode.



32

- 7 Press the pause buttons (PAUSE II on this unit) on both units to release the pauses.
- 8 Press the pause buttons on both units to pause the units again.
- 9 Repeat steps 7 and 8 to edit more scenes.
- 10 After editing is completed, press the stop buttons (□ on this unit) on both units to stop playback and recording.

* Although this unit does not have an EDIT function, using this function on a VCR connected to this unit for editing will avoid deterioration of the picture on the duplicated tape.

Notes on connection

Note that cord plugs and jacks are colour coded. Red plugs and jacks are for the right audio channel, white ones are for the left audio channel and yellow ones are for video signals.

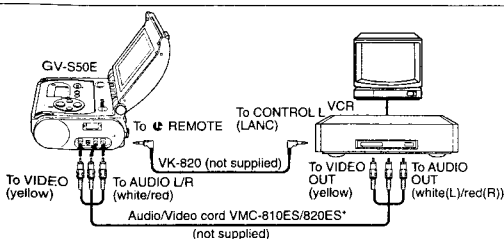
33

Editing Tapes

Editing from the VCR Equipped with the CONTROL L (LANC) Terminal

Connect the REMOTE terminal on this unit and the CONTROL L terminal on the other VCR, and then set the other VCR's LANC mode to "M." Playback/pause on the other VCR and recording/pause on this unit can be operated simultaneously from the other VCR by pressing only one button.

Connection



* If the other VCR is monaural type, use the VMC-710EM or VMC-720EM (not supplied). In this case, connect to AUDIO L (MONO) and VIDEO jacks.

Operation

- 1 Turn on the power of both units.
- 2 Insert a source tape into the other VCR (playback) and a tape for recording into this unit (recording).
- 3 Select the tape speed ("SP" or "LP" from "REC MODE") on the menu screen of this unit.
See "Settings on the Menu Screen" on pages 27 and 28.
- 4 Activate the EDIT function if it is provided with the other VCR.
- 5 Locate the playback start point and press the pause button on the other VCR.
- 6 Slide REC in the direction of the arrow and press PAUSE II on this unit.
This unit is now in recording pause mode.



34

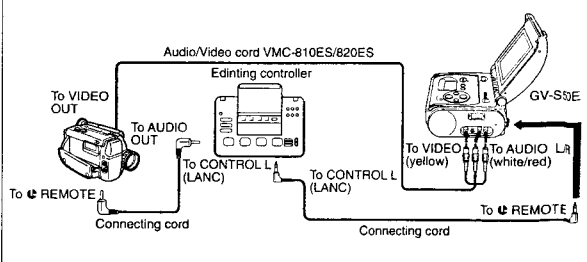
- 7 Press SYNCHRO EDIT on the other VCR to release the pause.
- 8 Press SYNCHRO EDIT on the other VCR to pause both units again.
- 9 Repeat steps 7 and 8 to edit other scenes.
- 10 After editing is completed, press the stop buttons (□ on this unit) on both units to stop playback and recording.

About (LANC)

LANC stands for Local Application Control Bus System. The LANC terminal is used for controlling the tape transport of video equipment and peripherals connected to it. This terminal has the same function as those indicated as CONTROL L or REMOTE.

Editing with an Editing Controller

By adding an editing controller to the video equipment connected through the LANC terminals, the various piece of equipment can be operated with the controller.

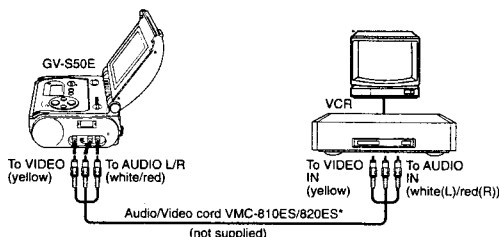


35

Editing Tapes

Editing from This Unit to Another VCR

Connection



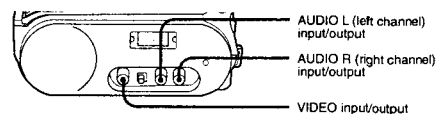
* If the other VCR is monaural type, use the VMC-710EM or VMC-720EM (not supplied). In this case, connect to AUDIO L (MONO) and VIDEO jacks.

Operation

- 1 Turn on the power of both units.
- 2 Insert a source tape into this unit (playback) and a tape for recording into the other VCR (recording).
- 3 Select the tape speed (SP/LP) on the other VCR.
- 4 Activate the EDIT function if it is provided with the other VCR.
- 5 Locate the playback start point and press PAUSE II on this unit.
- 6 Put the other VCR into recording pause mode.
- 7 Press the pause buttons (PAUSE II on this unit) on both units to release the pause.
- 8 Press the pause buttons on both units to pause the units again.
- 9 Repeat steps 7 and 8 to edit more scenes.
- 10 After editing is completed, press the stop buttons (□ on this unit) on both units to stop playback and recording.

VIDEO/AUDIO Input/Output Jacks

The VIDEO/AUDIO input/output jacks automatically become either input or output jacks according to the operating modes of this unit.



Relation between the operating mode and the input/output status

① When the TUNER/LINE switch on the TGV-3E is set to LINE or the TGV-3E is not installed.

Operating Mode	Input/Output Status
Stop	Input
Playback	Output
Recording	Input

② When the TUNER/LINE switch on the TGV-3E is set to TUNER (power is supplied).

Operating Mode	Input/Output Status
Stop	Output
Playback	Output
Recording	Output

The current status will appear on the screen for five seconds in the following cases:

- when the status has changed.
- when you press DISPLAY.

36

37

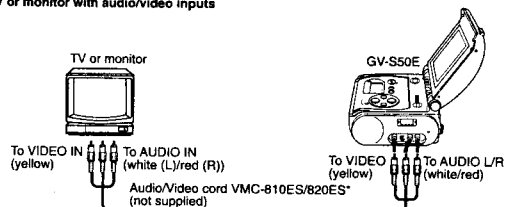
Connecting Other Video Equipment

You can connect other video equipment such as a TV, monitor, video camera recorder, VCR, etc. through the VIDEO/AUDIO input/output jacks. For additional information, refer to the operating manuals of the equipment you want to connect.

Connecting a TV or Monitor

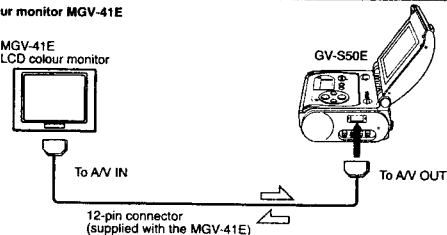
This allows you to view playback pictures on a larger screen.

① TV or monitor with audio/video inputs



* If your TV or monitor is monaural type, use the VMC-710EM or VMC-720EM (not supplied). In this case, connect to AUDIO L (MONO) and VIDEO jacks.

② LCD colour monitor MGV-41E



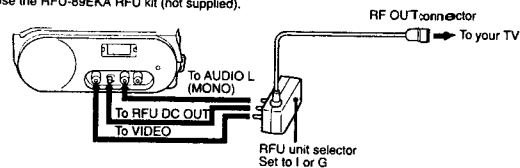
Notes

- Some functions are operable on the MGV-41E. For more details, refer to the instruction manual of the MGV-41E.
- When listening to the sound through the earphones connected to the MGV-41E, adjust the volume on the MGV-41E.
- When you connect the MGV-41E to this unit, the sound is heard from the speaker of this unit but the picture does not appear on the LCD of this unit.

38

③ TV without audio/video inputs

Use the RFU-89EKA RFU kit (not supplied).



Note

The RFU-89EKA includes the following accessories:

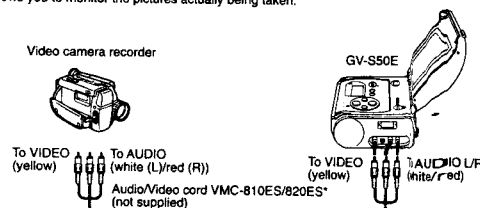
- RFU adaptor (1)
- Aerial selector (1)

To set the channel for this unit

To view the playback picture of this unit, set the RFU unit selector of the RFU adaptor according to the TV system of your country, then turn on the TV and select a programme position that is not used to receive a TV station.

Connecting a Video Camera Recorder

This allows you to monitor the pictures actually being taken.



* If your camera recorder is monaural type, use the VMC-710EM or VMC-720EM (not supplied). In this case, connect to AUDIO L (MONO) and VIDEO jacks.

Connecting a VCR

This allows you to edit tapes as explained before. See pages 32 - 37.

Maintenance

Main Unit

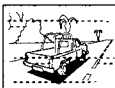
- When the unit is not used for a long period of time, periodically turn on the power and play back a tape for about three minutes.
- Clean the cabinet with a dry, soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

Video Head Cleaning

To ensure a clear picture, clean the video heads periodically. If playback pictures are noisy or hardly visible, the video heads may be contaminated. If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied) referring to the instructions supplied with it.

Caution

Do not use commercially available wet-type cleaning cassettes. They may damage the video heads.



Note

If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

Video Head Replacement

When playback pictures are not clear even after using the cleaning cassette, the video head may be damaged. If this happens, the video head needs to be replaced with a new one. Consult your Sony service facility for replacing the video head.

Built-in Lighting System

A built-in lighting system is installed inside the liquid crystal screen of this unit. Eventually the small fluorescent tube used for this built-in lighting system wears out. If the tube becomes dim or goes off immediately after you turn on the unit, even with new batteries, replace the tube with a new one. To replace the tube, consult the dealer where you purchased the unit, or a Sony service facility. The expected life of the small fluorescent tube is about three years if this unit is used for an hour each day. When you use this unit in a cold environment, the fluorescent tube will be dimmer at first. As soon as the temperature of the tube rises, it will regain its original brightness.

LCD

- Do not push the display forcibly.
- If the unit is used in a cold place, a residual image may appear on the screen. This is not a malfunction of the unit.
- Constant bright points of light (red, blue, or green) may appear on the screen. This is not a malfunction of the unit.

40

Using Your Video Recorder/Monitor Abroad

If you prepare fully charged battery packs and the supplied AC power adaptor (which can be used in all areas with a local power supply ranging from 100 V – 240 V), you can use your video recorder/monitor in any country. However, since the shape of the outlet differs widely in the world, you may need an AC plug adaptor.

Each country has special TV colour broadcast and electricity systems. This unit is designed to play back and record using the PAL colour video signals. Playback and recording of video sources of other colour signals (NTSC and SECAM) cannot be guaranteed.

Countries using PAL colour signal

Australia, Austria, Belgium, China, Denmark, Finland, Germany (Former West Germany), Great Britain, Holland, Hong Kong, Italy, Kuwait, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

42

Moisture Condensation

If this unit is brought directly from a cold place to a warm place, moisture may condense inside the unit or on the surface of the tape. If this happens, the tape may stick to the head drum, damaging both the tape and the unit. Although this unit is furnished with a moisture sensor to prevent possible damage from condensation, it cannot prevent damage if a tape is left inside the unit. It is best to remove the tape if you are not using the unit.

If moisture condenses inside the unit

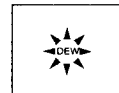
"DEW" appears on the screen.

No button will function except EJECT .

Eject the cassette, turn off the unit and leave the cassette holder open for at least an hour.

The unit can be used again if "DEW" does not appear when one of the tape transport buttons (▶ (play),

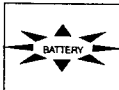
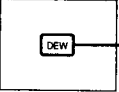
□ (stop), PAUSE II, FF ►► or REW ◀◀) is pressed.



41

Warning Displayed on the Screen

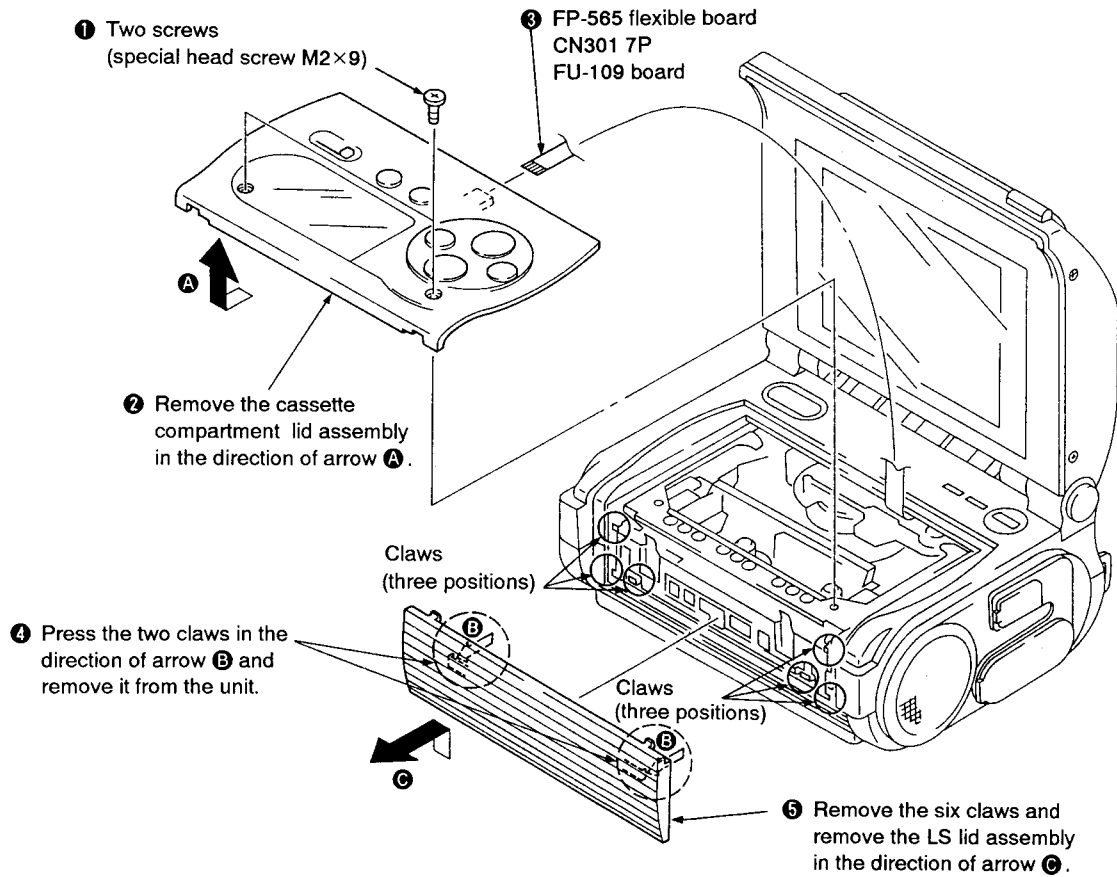
The following indications appear on the screen indicating the operating environments and cautions. These indications are not recorded on the tape, but are generated by the unit and only exist on the screen.

Indication	Meaning
	- No cassette is inserted. - The tape is at its end. - The red mark on the cassette is exposed although you are trying to record.
	The battery is used up (see page 13).
	Moisture condensation occurs (see page 41).

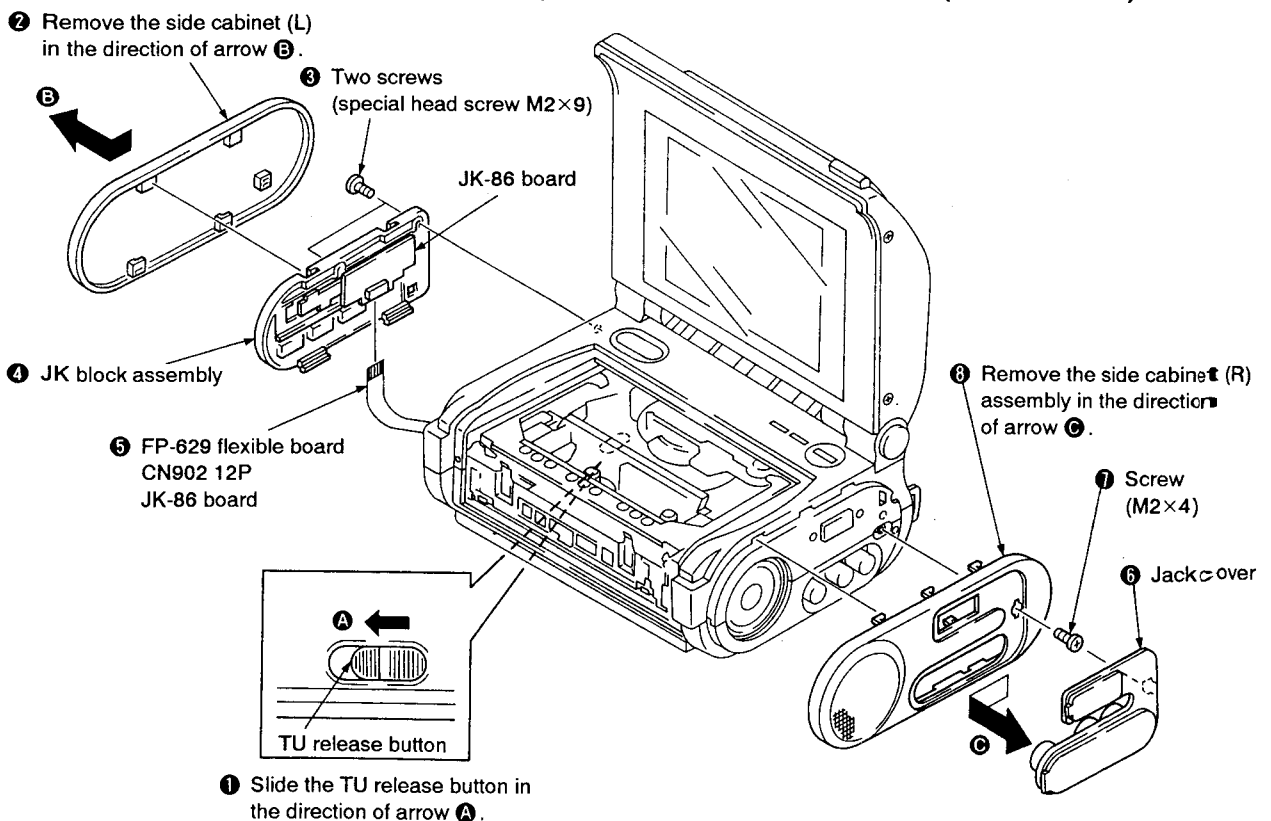
46

SECTION 2 DISASSEMBLY

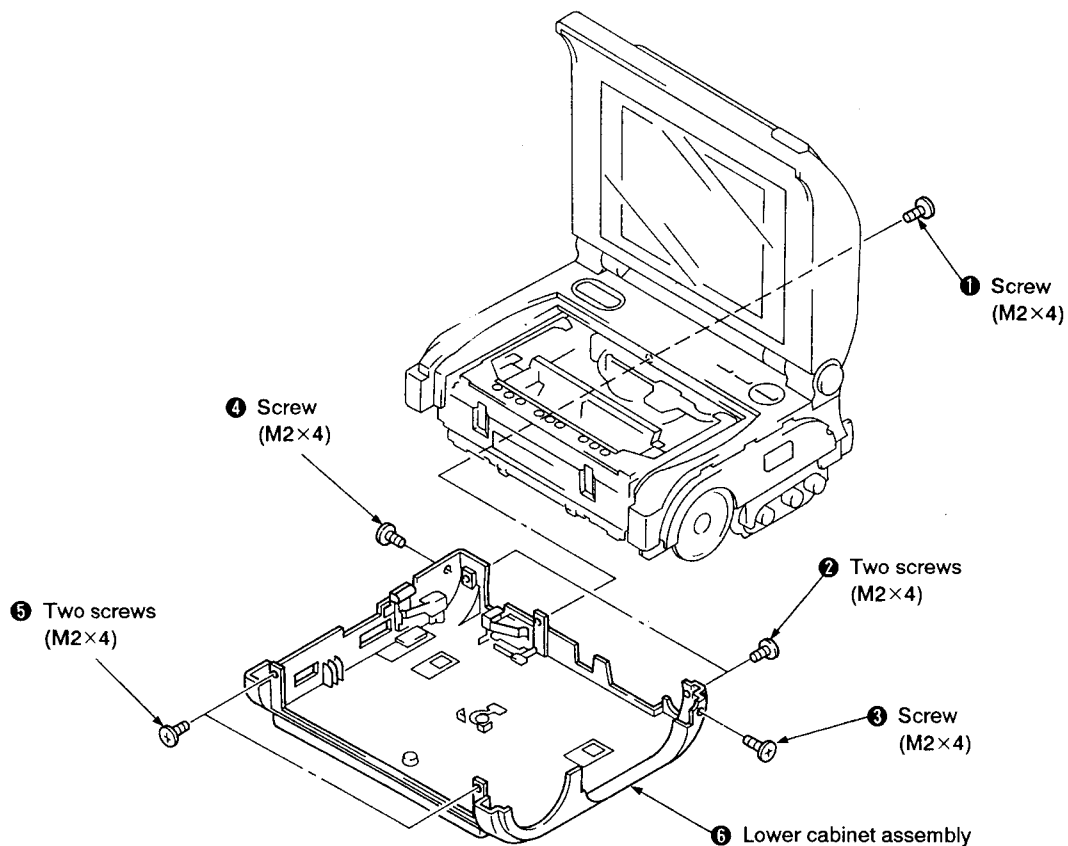
2-1. REMOVAL OF CASSETTE COMPARTMENT LID ASSEMBLY AND LS LID ASSEMBLY



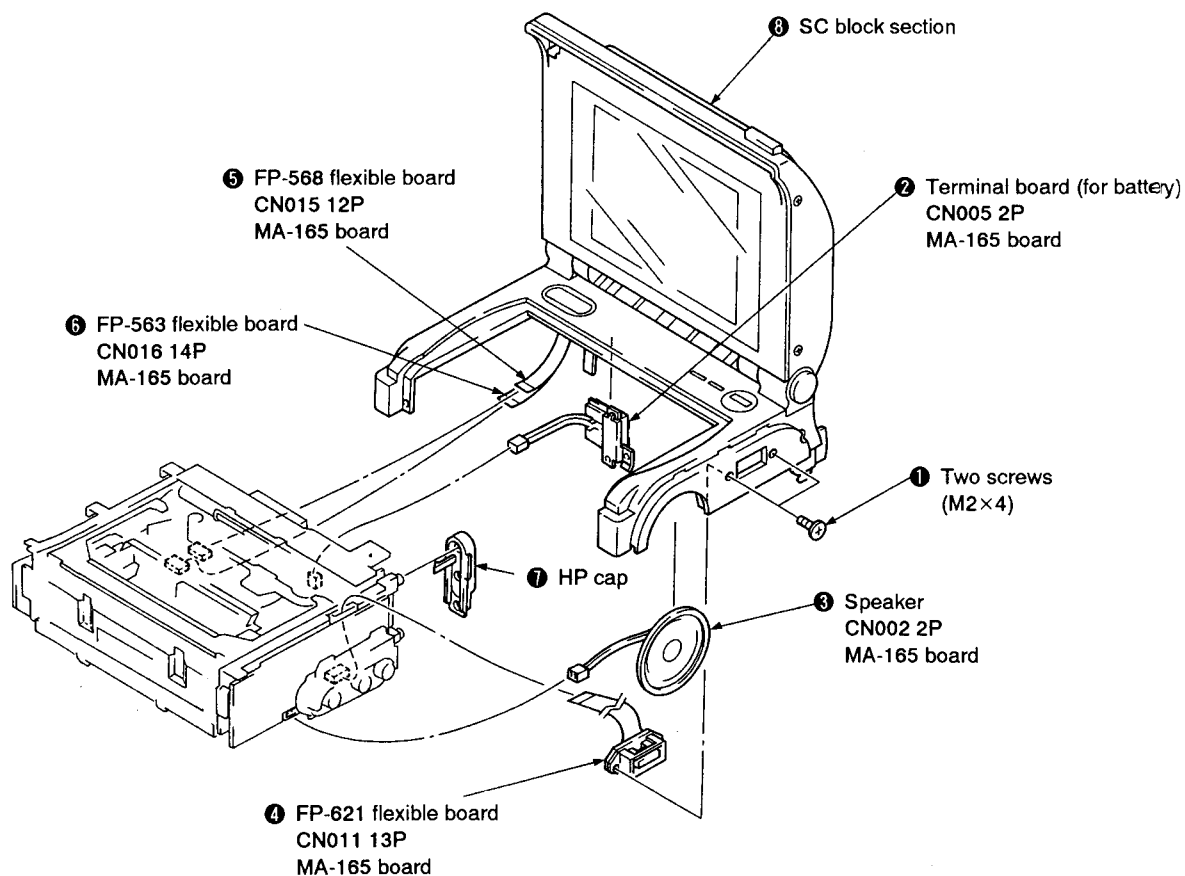
2-2. REMOVAL OF SIDE CABINETS (L, R) AND JK BLOCK ASSEMBLIES (JK-86 BOARD)



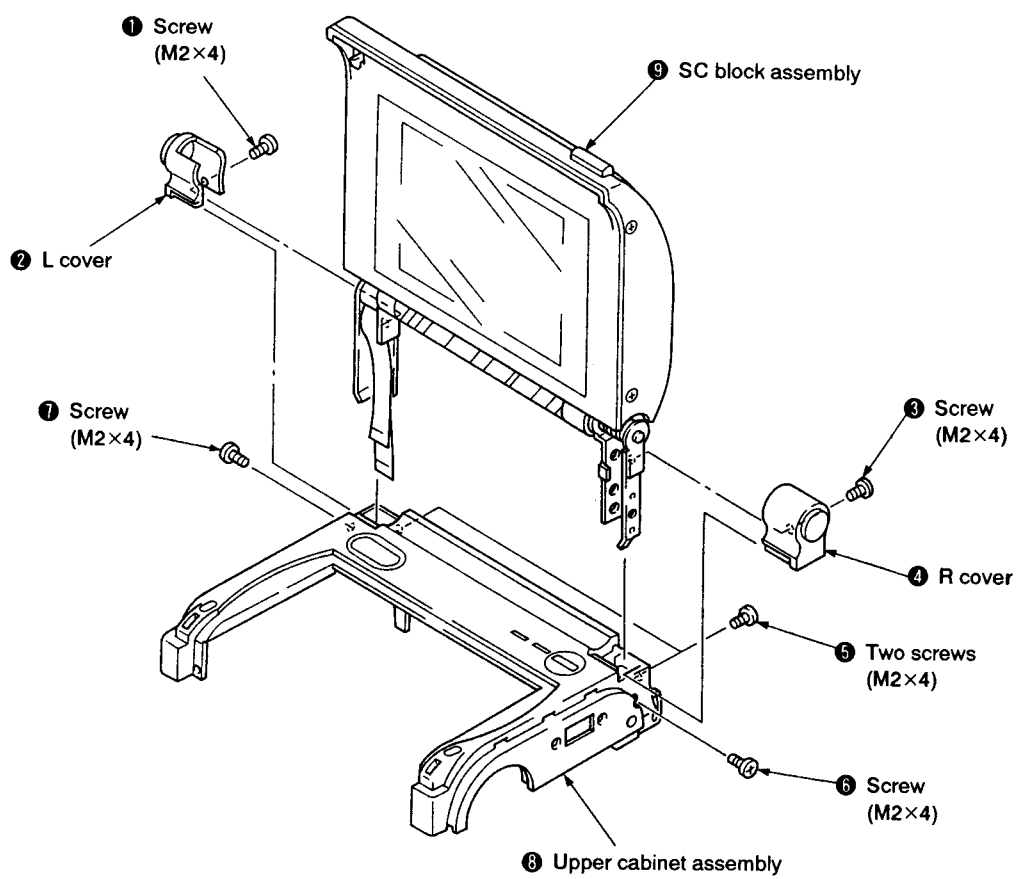
2-3. REMOVAL OF LOWER CABINET ASSEMBLY



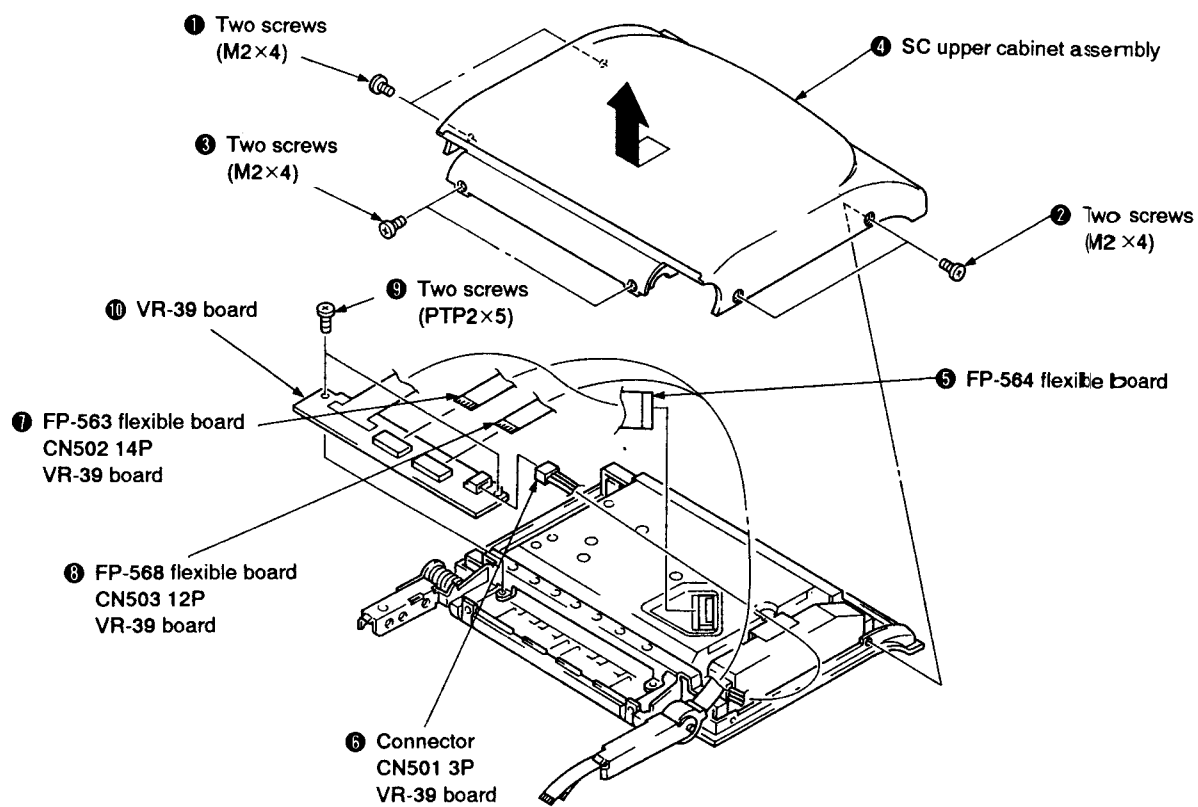
2-4. REMOVAL OF SC BLOCK SECTION



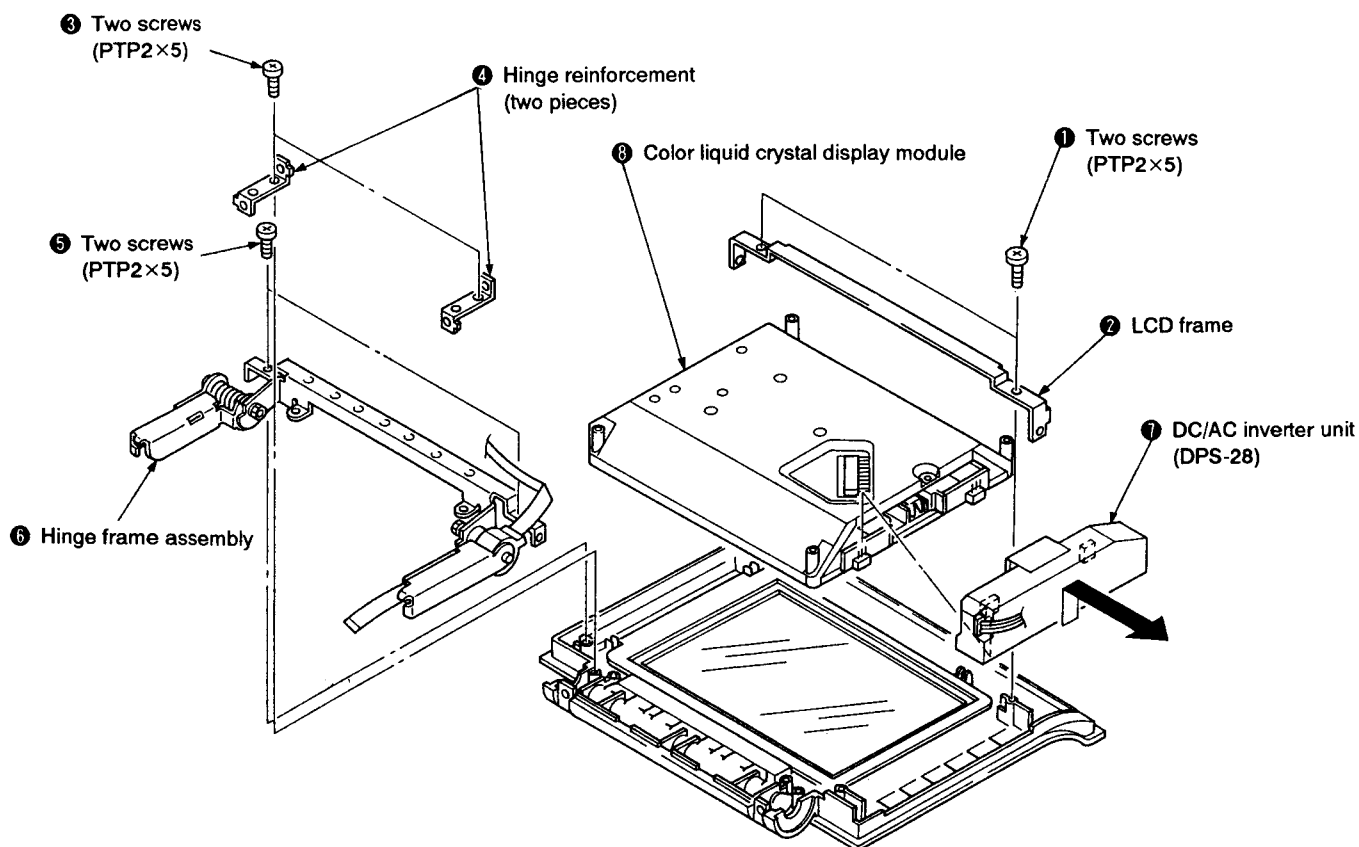
2-5. REMOVAL OF SC BLOCK ASSEMBLY



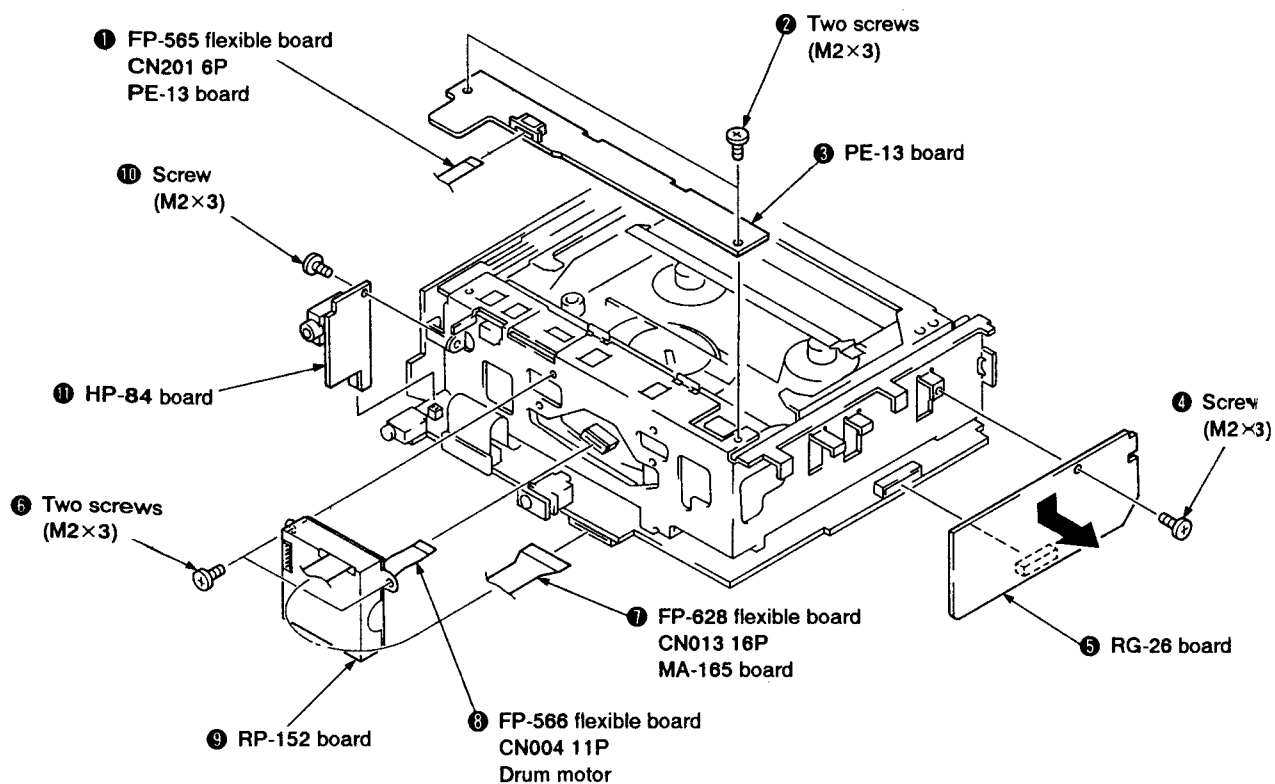
2-6. REMOVAL OF VR-39 BOARD



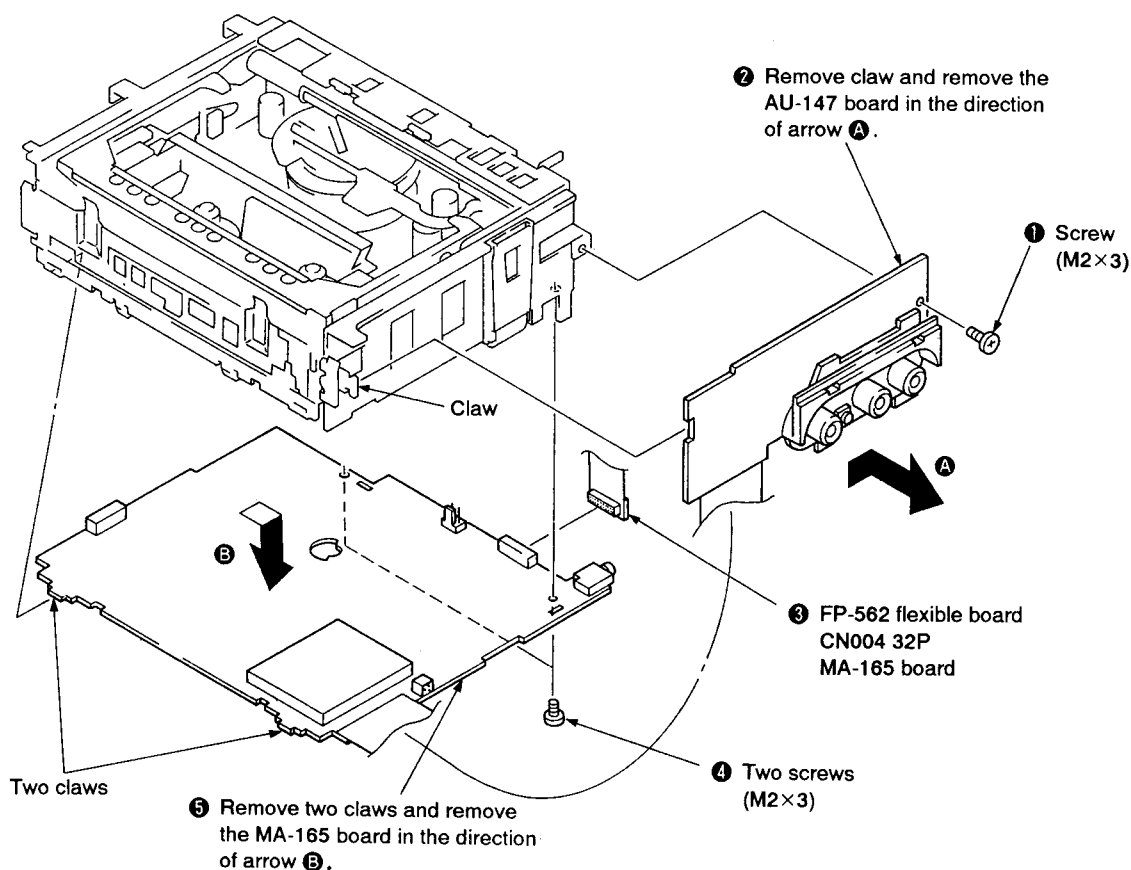
2-7. REMOVAL OF COLOR LIQUID CRYSTAL DISPLAY MODULE



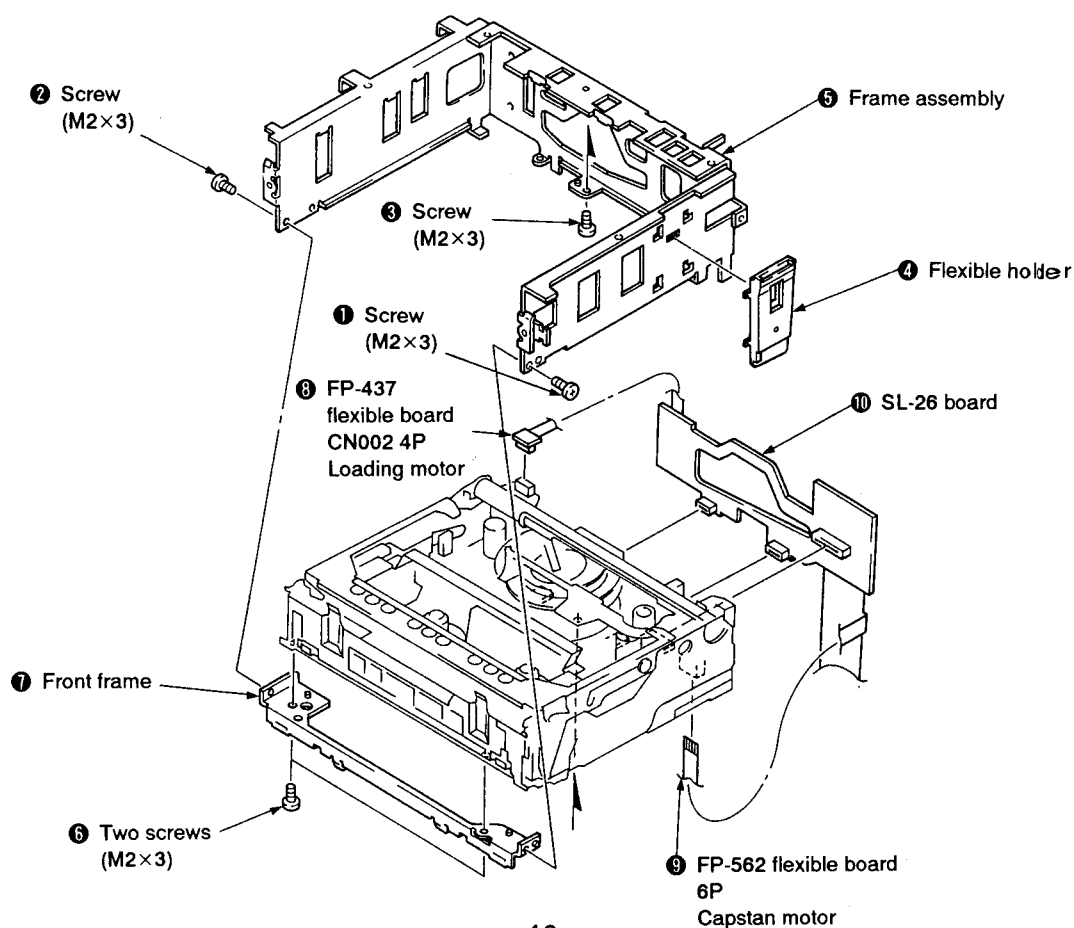
2-8. REMOVAL OF PE-13, RG-26, RP-152, HP-84 BOARDS



2-9. REMOVAL OF AU-147 AND MA-165 BOARDS

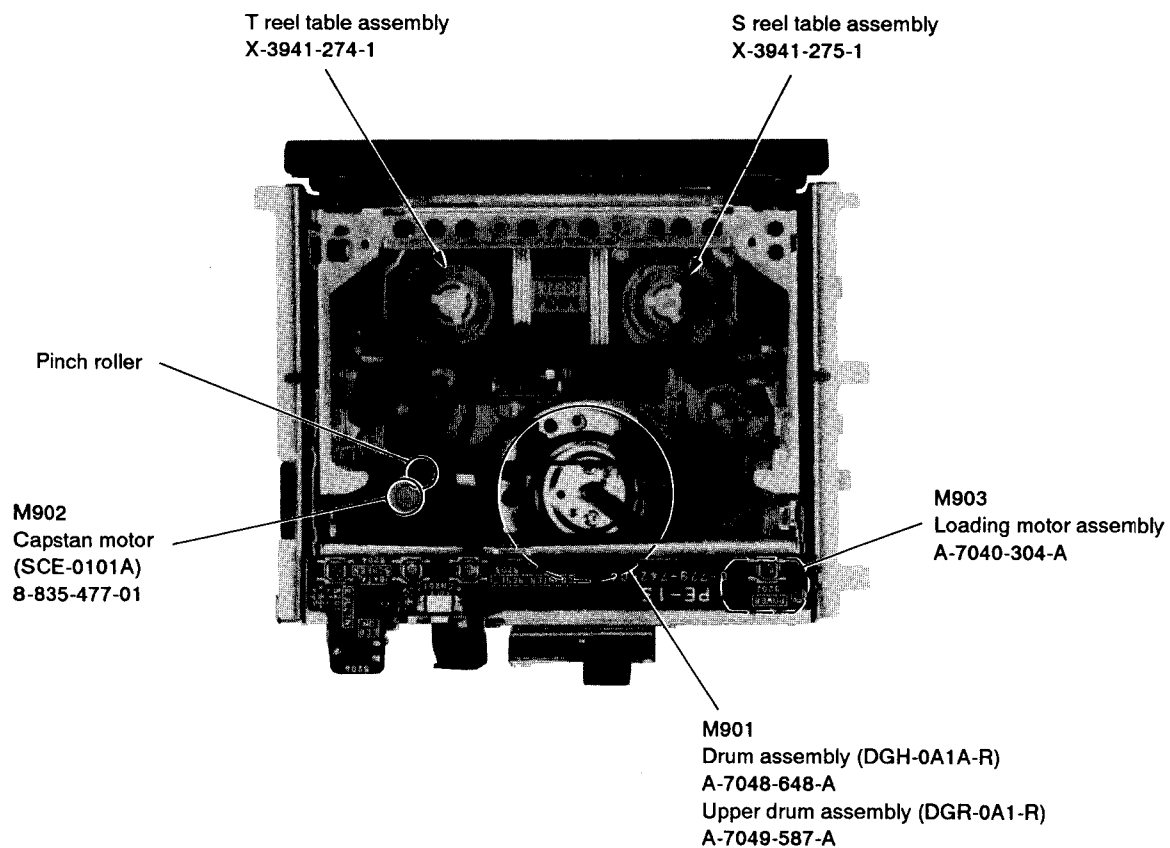


2-10. REMOVAL OF SL-26 BOARD

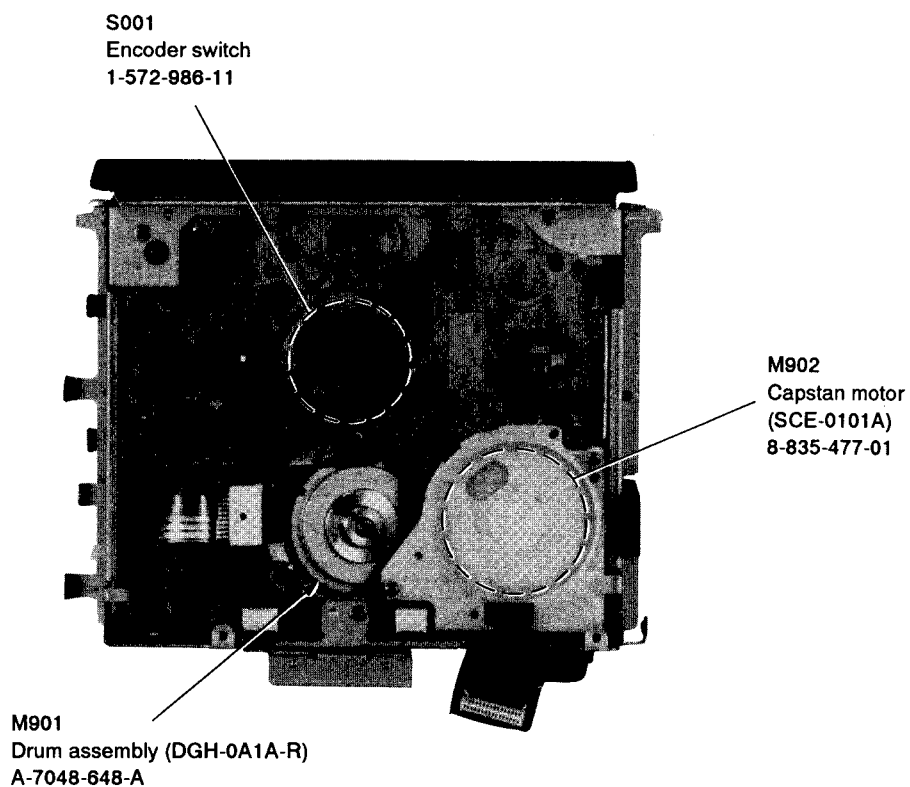


2-11. INTERNAL VIEWS

— Top Side —

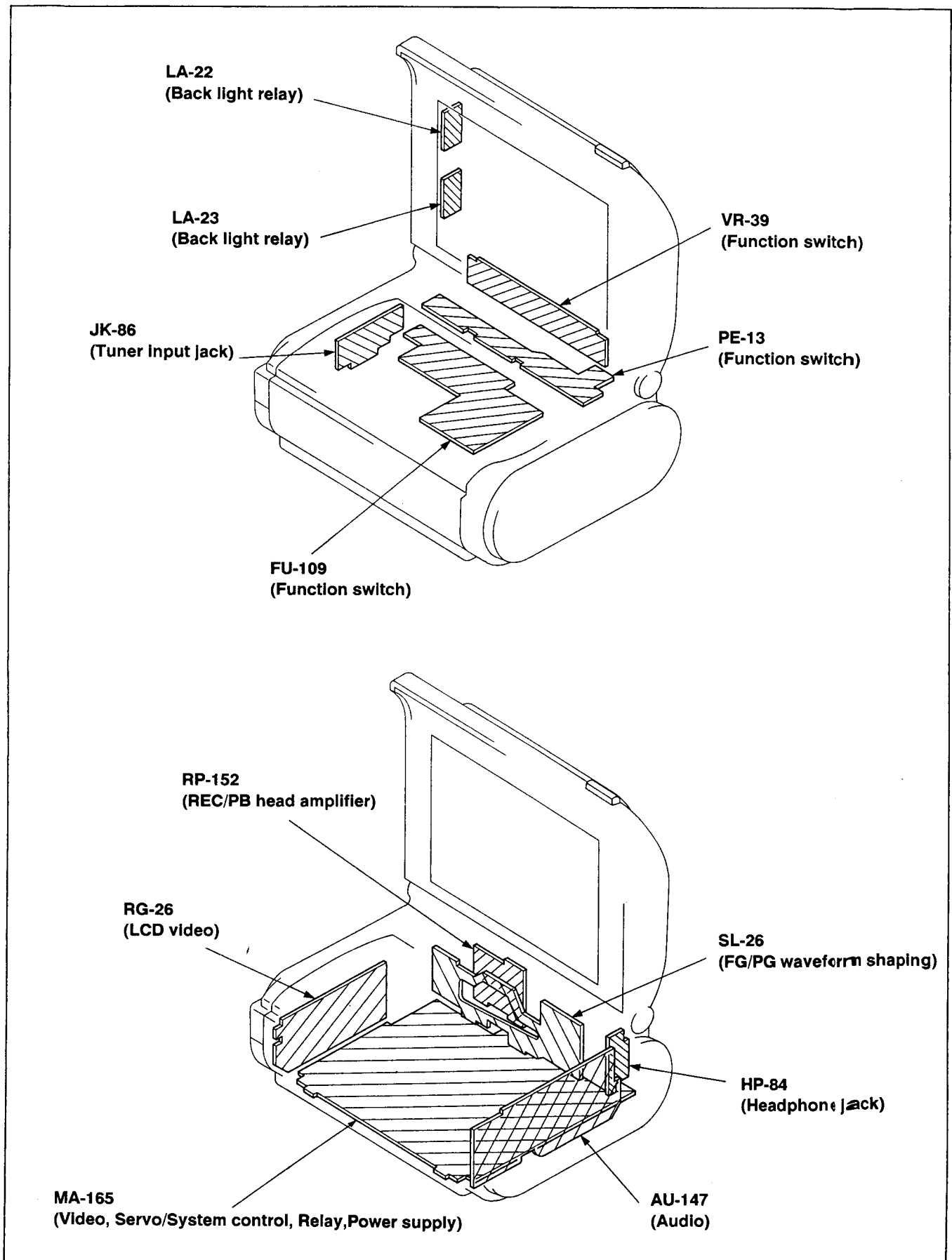


— Bottom side —

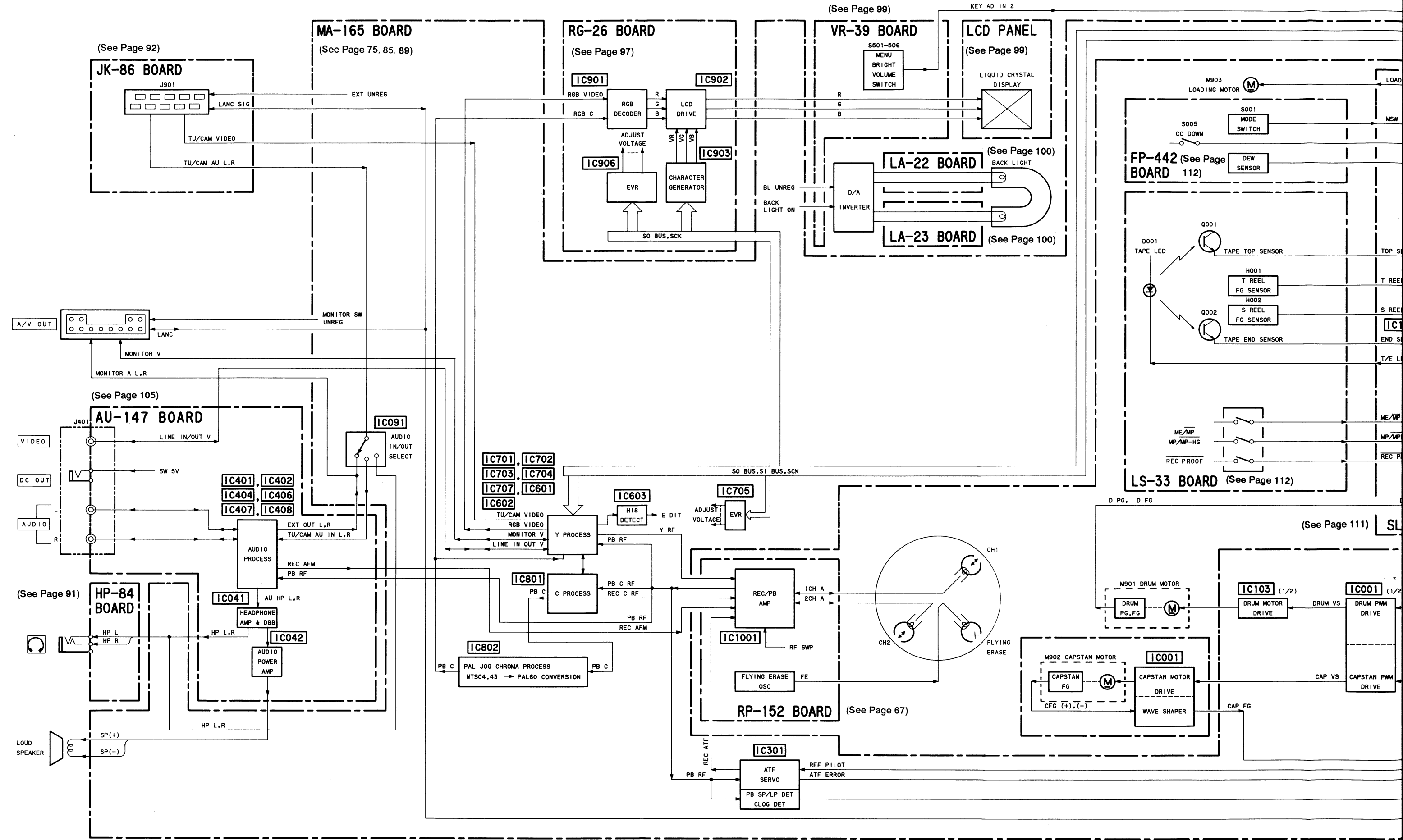


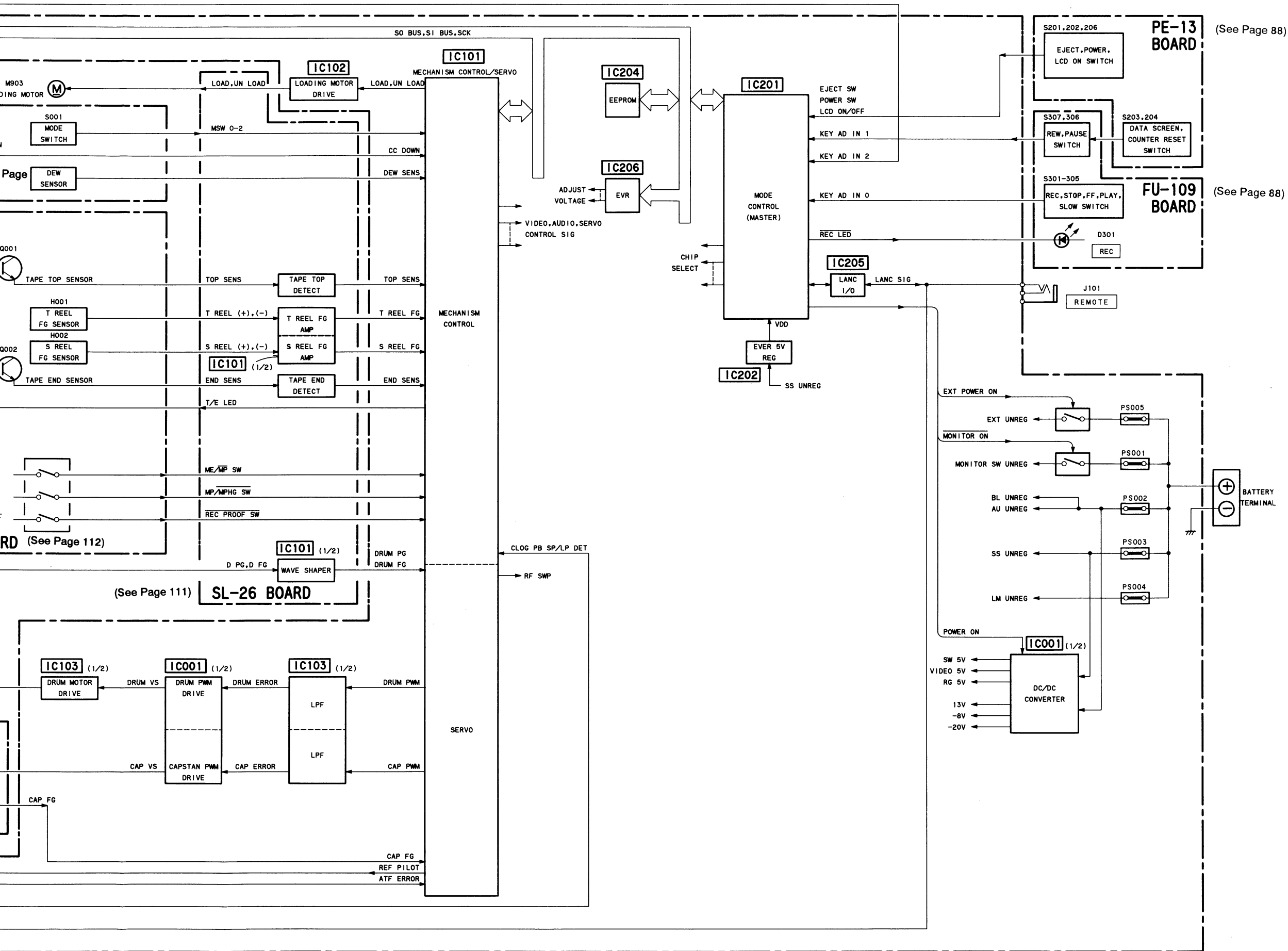
SECTION 3 DIAGRAMS

3-1. CIRCUIT BOARDS LOCATION



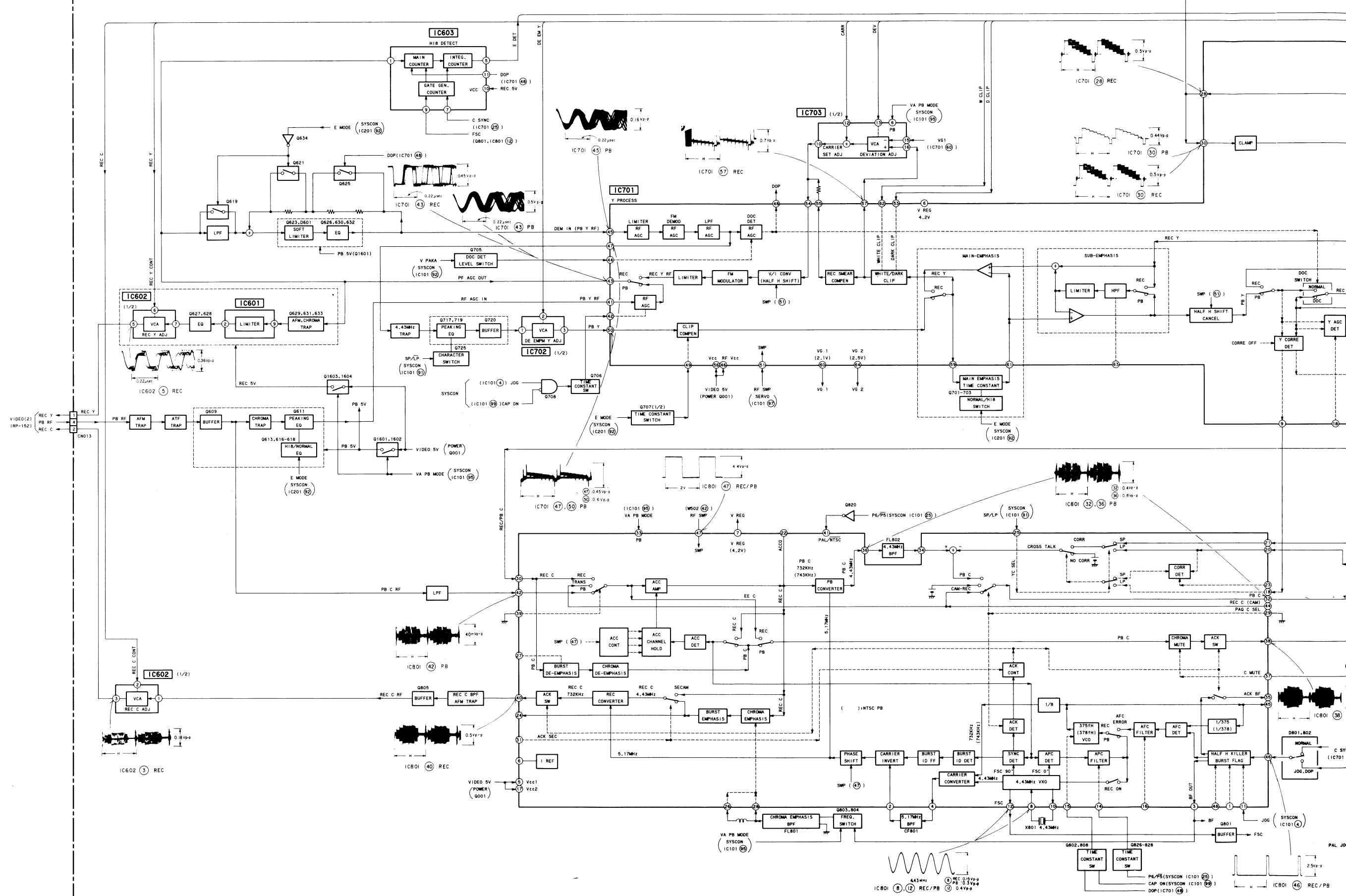
3-2. OVERALL BLOCK DIAGRAM

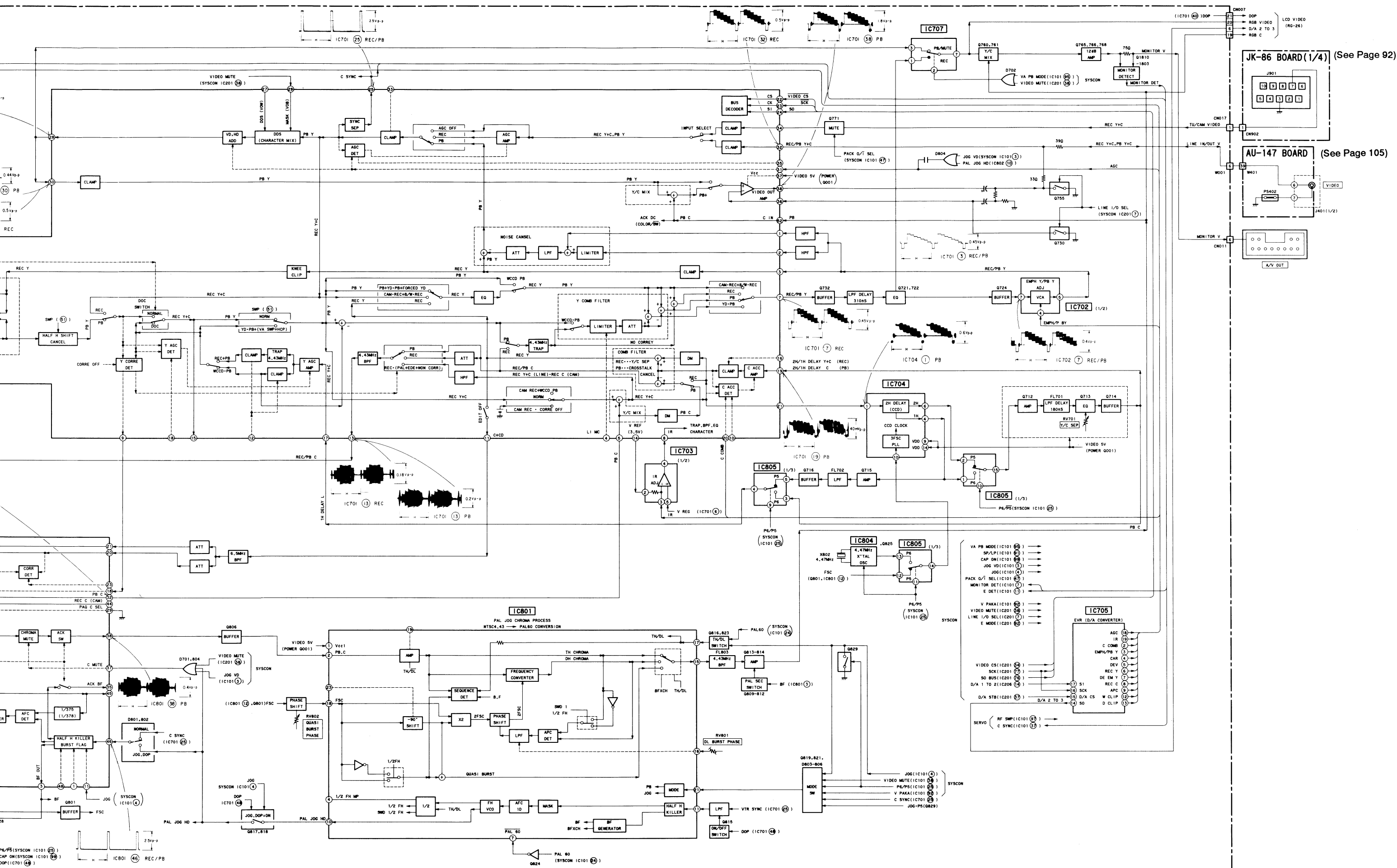




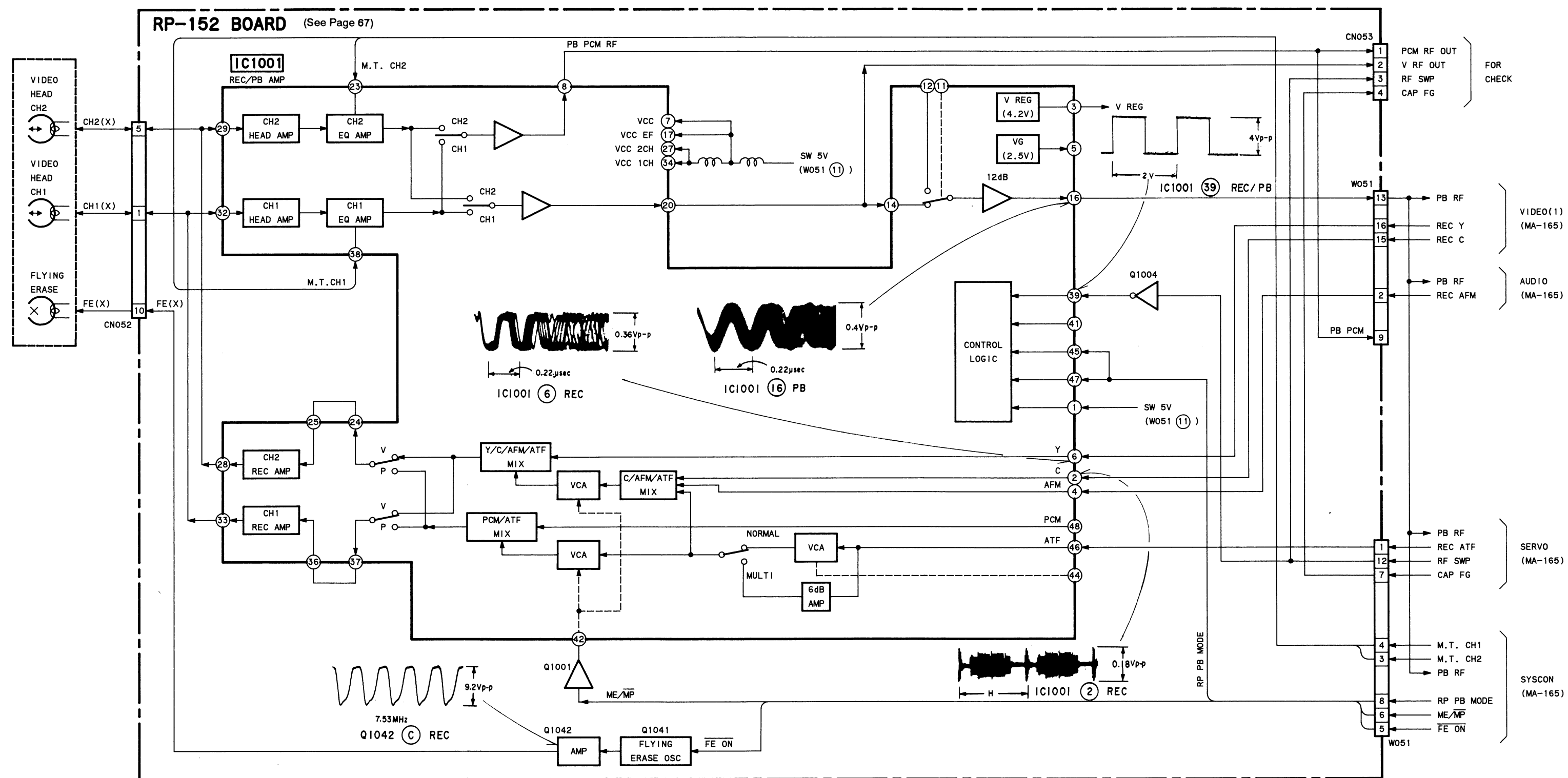
3-3. VIDEO (1) BLOCK DIAGRAM

MA-165 BOARD (1/6)
(See Page 75)

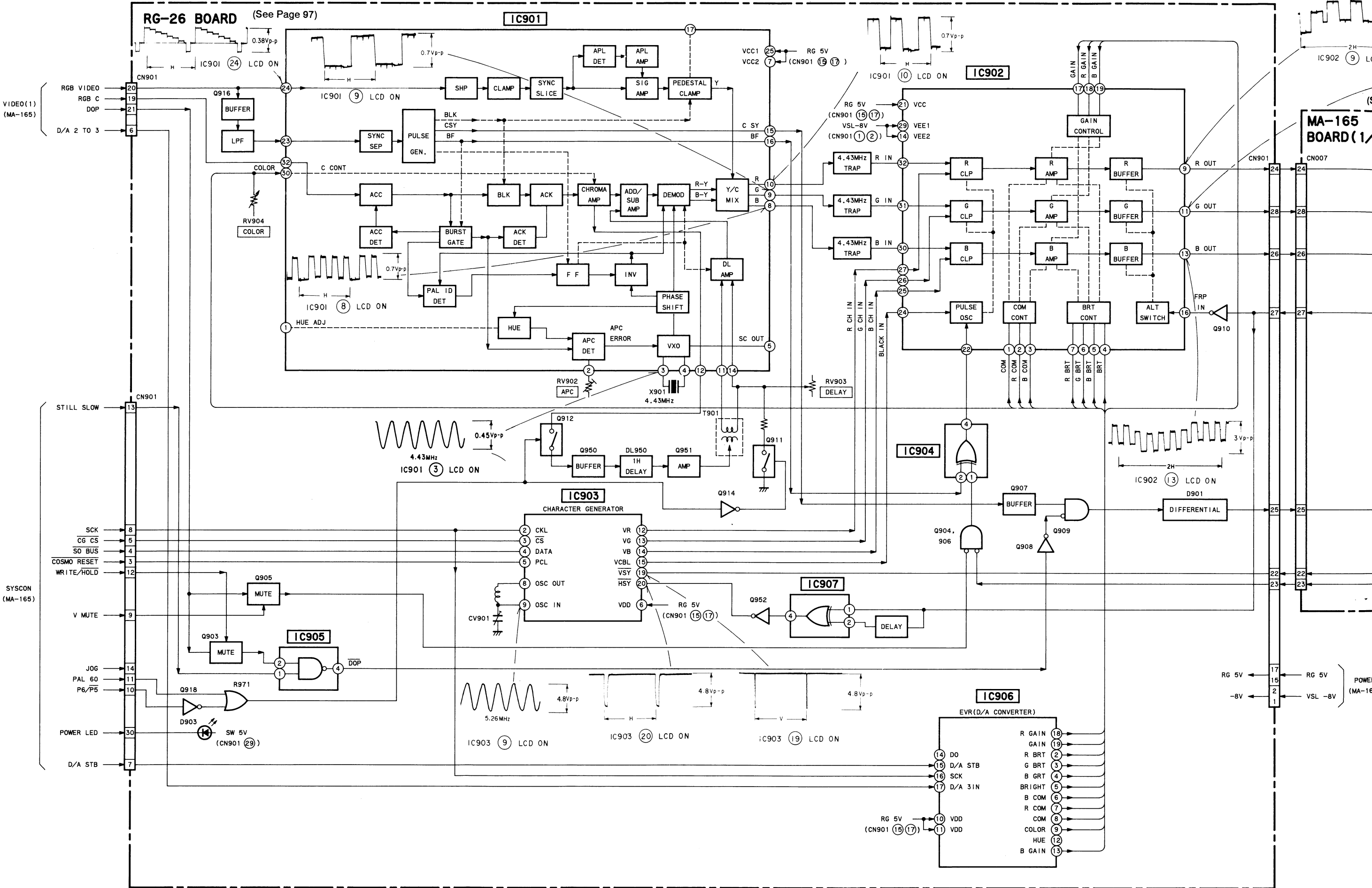




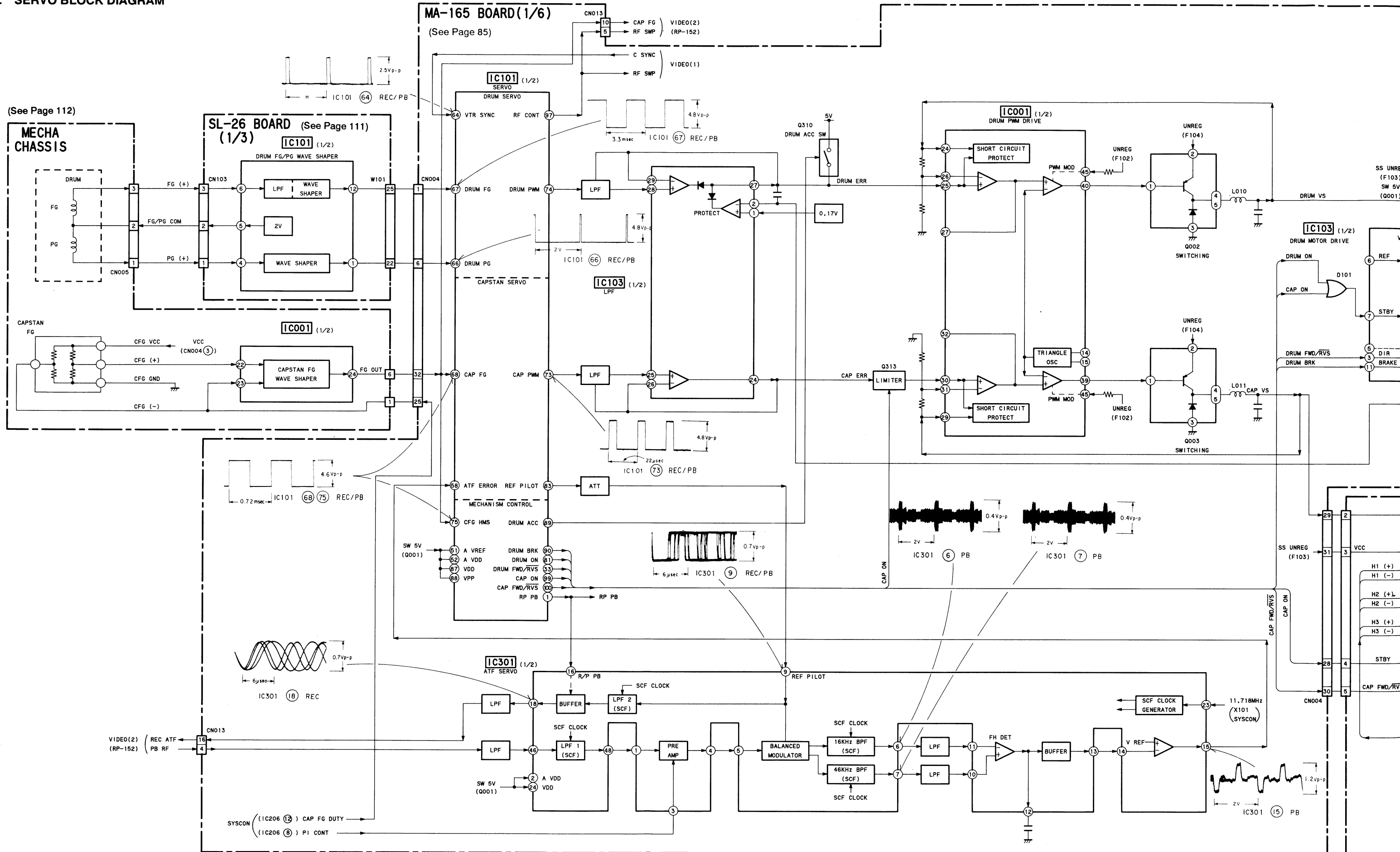
3-4. VIDEO (2) BLOCK DIAGRAM

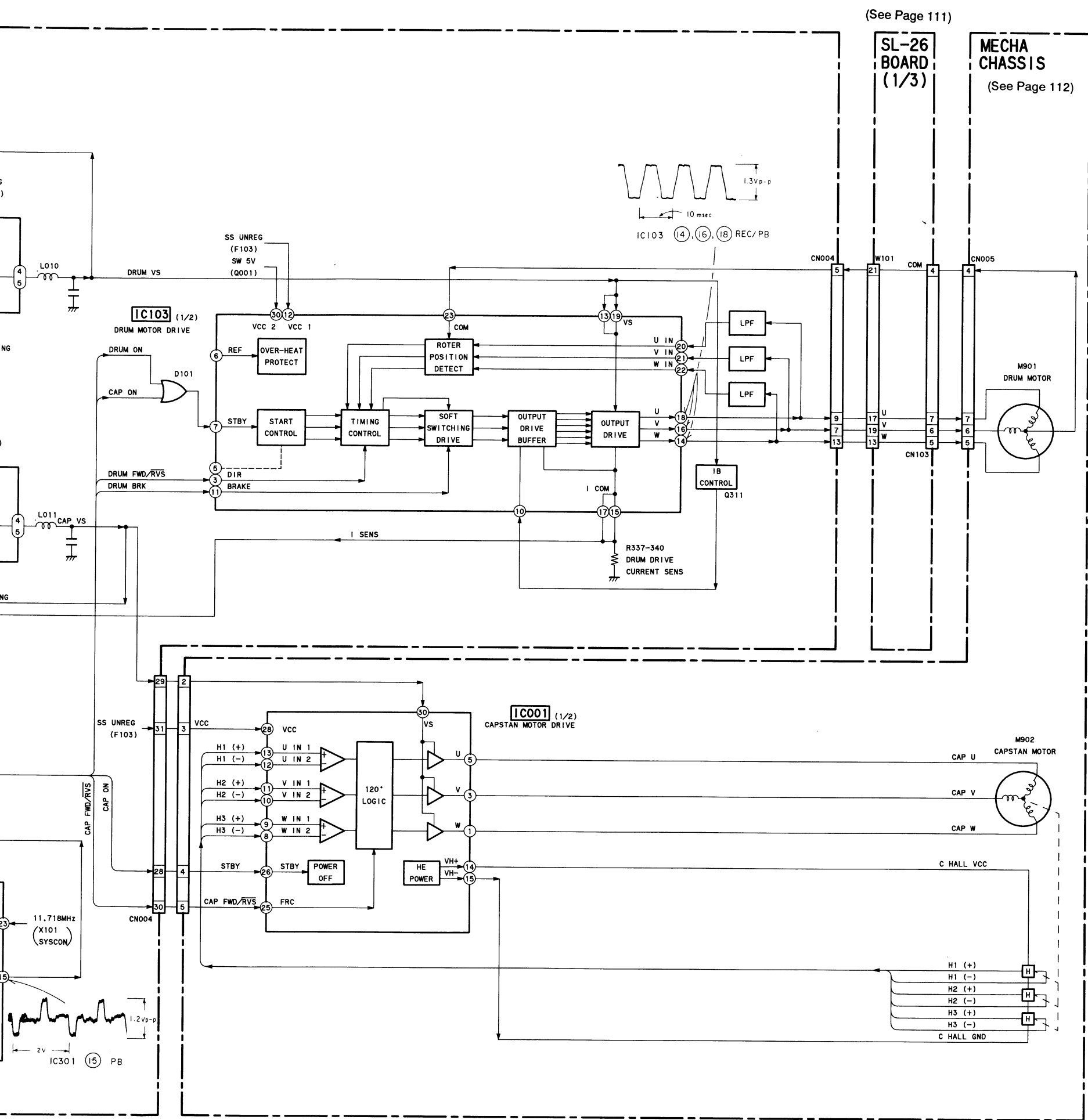


3-5. LCD BLOCK DIAGRAM

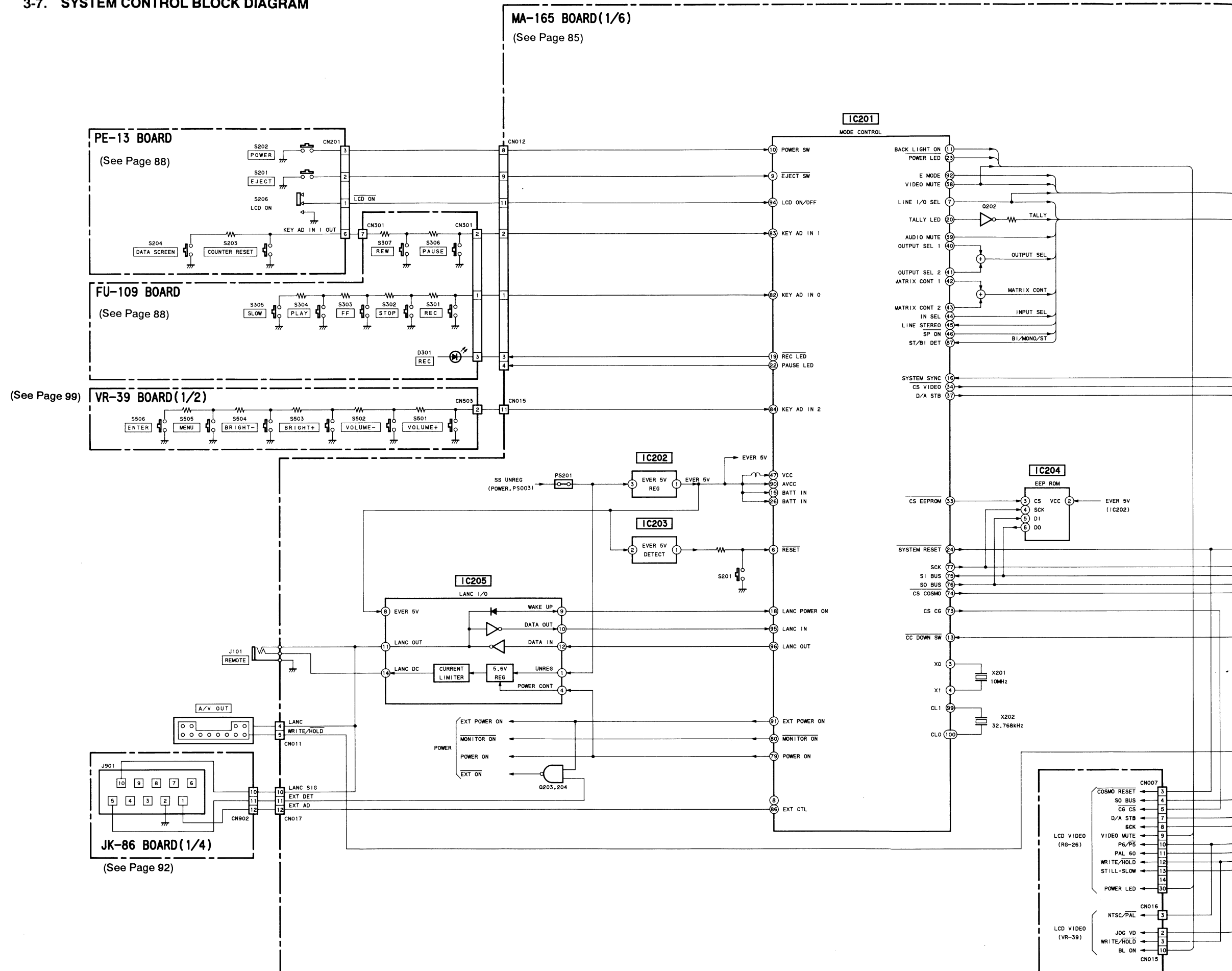


3-6. SERVO BLOCK DIAGRAM





3-7. SYSTEM CONTROL BLOCK DIAGRAM



3-8. MECHANISM CONTROL MICRO PROCESSOR (IC101 on MA-165 Board: CXP80624A)
PIN FUNCTIONS

Pin No.	Signal Name	I/O	Function																												
1	RP PB MODE	O	REC/PB switching signal of REC/PB amplifier and ATF servo IC. "H" when PB.																												
2	FE ON	O	Flying erase oscillation ON/OFF control signal. Oscillation when "L".																												
3	JOG VD	O	False VD signal inserted into playback video signal during variable speed playback.																												
4	JOG	O	Variable speed playback/normal playback switching signal of video circuit. "H" during variable speed playback.																												
5			Not used.																												
6																															
7	VIEWER DET	I	Signal indicating that peripheral equipment is connected to A/V output pin. "H" when peripheral equipment is connected.																												
8			Not used.																												
9	PB V	O	Used as the reference for serial data communication, LANC cycle. V sync. Synchronizes with VTR SYNC (Pin 64).																												
10			Not used.																												
11	E DET	I	Normal/Hi8 discrimination input. "H" when playing back a Hi8 tape recorded.																												
12	WRITE/HOLD	O	RGB signal data writing control signal to LCD panel. Normally "H".																												
13	MODE SW 0	I	MODE switch input. <table><tr><td></td><td>EJECT</td><td>USE</td><td>LOAD</td><td>READY</td><td>RP</td><td>FF</td></tr><tr><td>MODE SW 0</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr><tr><td>MODE SW 1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td></tr><tr><td>MODE SW 2</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td></tr></table>		EJECT	USE	LOAD	READY	RP	FF	MODE SW 0	0	1	0	1	0	0	MODE SW 1	0	0	0	0	1	0	MODE SW 2	1	1	1	0	0	0
	EJECT	USE		LOAD	READY	RP	FF																								
MODE SW 0	0	1		0	1	0	0																								
MODE SW 1	0	0		0	0	1	0																								
MODE SW 2	1	1	1	0	0	0																									
14	MODE SW 1	I																													
15	MODE SW 2	I																													
16	CC LOCK SW	I	Cassette compartment lock switch input. "L" when lock.																												
17	REC PROOF SW	I	Record-proof switch input. REC prohibition: "H".																												
18	ME/MP SW	I	Tape type discrimination switch input. ME: "H", MP: "L".																												
19	HG/NOR	I	MP tape type discrimination switch input. Hi8 MP tape: "H", Normal tape: "L".																												
20			Not used.																												
21																															
22	DBB ON	O	DBB ON/OFF control signal. DBB ON at "H".																												
23	SURROUND ON	O	Surround ON/OFF signal. "Surround" ON at "H".																												
24	PAL60	O	PB SYSTEM switching signal. "H" during "NTSC 2" mode playback.																												
25	P6/P5	O	PB SYSTEM switching signal. "H" during "NTSC 1" or "NTSC 2" mode playback.																												
26	STILL•SLOW	O	Signal indicating that STILL and SLOW playback is being performed. "H" during SILL and SLOW playback.																												
27	ME/MP	O	ME/MP switching signal output. MP tape: "L"																												
28	LINE/HP	O	Switching signal of audio signal output to accessory pack pin. LINE OUT audio: "H", Headphone audio: "L".																												
29	UNLOAD	O	Loading motor control signal. When unloading: "H" or "H" pulse.																												
30	LOAD	O	Loading motor control signal. When loading: "H" or "H" pulse.																												
31	LM LIM CONT	O	Loading motor current limiter control signal. Temporarily "H" when loading.																												
32			Not used.																												
33	DRUM FWD/REV	O	Drum rotating direction control signal. Normally "H".																												
34			Not used.																												
35																															
36	REEL HALL CONT	O	Power supply control signal of reel FG sensor. "L" pulse when REC/PB.																												
37	MP	I	Connected to GND.																												
38	COSMO RESET	I	Reset signal. Reset when "L".																												
39	VSS		GND.																												
40	XTAL	O	11.89 MHz oscillation circuit output pin.																												

Pin No.	Signal Name	I/O	Function
41	EXTAL	I	11.89 MHz oscillation circuit input pin.
42	COSMO CS	I	Chip select signal from mode control micro processor. V cycle "L" pulse.
43	SERIAL IN	I	Serial data input.
44	SERIAL OUT	O	Serial data output.
45	SCK	O	Serial clock output.
46			Not used.
47	PAC O/I SEL	O	Signal which controls the accessory pack pin signal direction. When "H", the signal is output from the main unit to the accessory pack.
48			Not used.
49			
50	AVSS		Analog port GND.
51	AVREF		Analog port reference voltage input (Connected to AVDD).
52	AVDD		Analog port power supply (+5V).
53			Not used.
54	END SENS	I	Tape end detecting signal. Normally "L". "H" pulse at tape end.
55	TOP SENS	I	Tape top detecting signal. Normally "L". "H" pulse at tape top.
56	DEW DET	I	Condensation detection signal input. "L" when condensation occurred.
57	BATT SENSE	I	Battery voltage input for battery end detecting. The voltage divided into 2 by R114 and R115 is input.
58	ATF ERROR	I	ATF error, ATF lock error voltage input.
59	S REEL	I	S reel FG signal input.
60	T REEL	I	T reel FG signal input.
61			Not used.
62			
63			
64	VTR SYNC	I	Composite sync signal input separated from recording/playback Y signal.
65	SP/LP DET	I	Recording mode discrimination signal of the tape played back when CUE/REV/FF/REW. "H" when SP tape.
66	DRUM PG	I	Drum PG signal input. For drum phase servo. 40 msec. cycle "H" pulse when REC/PB.
67	DRUM FG	I	Drum FG signal input. For drum speed servo. 300 Hz square wave when REC/PB.
68	CAP FG	I	Capstan FG signal input. For capstan speed servo. Approx. 1390 Hz in SP mode REC/PB, Approx. 697 Hz in LP mode REC/PB.
69			Not used.
70	TOP/END LED ON	O	LED ON/OFF signal for detecting tape top and end. "H" pulse during tape running.
71			Not used.
72			
73			
74	CAP PWM	O	Capstan error signal output. 20.15 μ sec. cycle PWM signal.
75	DRUM PWM	O	Drum error signal output. 20.15 μ sec. cycle PWM signal.
76	CFG HMS	I	Capstan FG signal input for tape counter.
77			Not used.
78			
79			
80	LM LIM ON	I	Loading motor driver current limiter detecting signal input. Normally "H". "L" when limiter is ON.
81			Not used.
82	DRUM ON	O	Drum motor ON/OFF control signal. Drum rotates at "H".
83	CLOG DET	I	Head clog detecting signal input. Normally "L".
84	REF PILOT	O	Reference pilot signal output for ATF servo. Synchronizes with drum rotation, switches four frequencies sequentially and outputs. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz, f4=146.5 kHz.

variable speed

FF
0
0
0

Pin No.	Signal Name	I/O	Function
41	EXTAL	I	11.89 MHz oscillation circuit input pin.
42	COSMO CS	I	Chip select signal from mode control micro processor. V cycle "L" pulse.
43	SERIAL IN	I	Serial data input.
44	SERIAL OUT	O	Serial data output.
45	SCK	O	Serial clock output.
46			Not used.
47	PAC O/I SEL	O	Signal which controls the accessory pack pin signal direction. When "H", the signal is output from the main unit to the accessory pack.
48			Not used.
49			
50	AVSS		Analog port GND.
51	AVREF		Analog port reference voltage input (Connected to AVDD).
52	AVDD		Analog port power supply (+5V).
53			Not used.
54	END SENS	I	Tape end detecting signal. Normally "L". "H" pulse at tape end.
55	TOP SENS	I	Tape top detecting signal. Normally "L". "H" pulse at tape top.
56	DEW DET	I	Condensation detection signal input. "L" when condensation occurred.
57	BATT SENSE	I	Battery voltage input for battery end detecting. The voltage divided into 2 by R114 and R115 is input.
58	ATF ERROR	I	ATF error, ATF lock error voltage input.
59	S REEL	I	S reel FG signal input.
60	T REEL	I	T reel FG signal input.
61			Not used.
62			
63			
64	VTR SYNC	I	Composite sync signal input separated from recording/playback Y signal.
65	SP/LP DET	I	Recording mode discrimination signal of the tape played back when CUE/REV/FF/REW. "H" when SP tape.
66	DRUM PG	I	Drum PG signal input. For drum phase servo. 40 msec. cycle "H" pulse when REC/PB.
67	DRUM FG	I	Drum FG signal input. For drum speed servo. 300 Hz square wave when REC/PB.
68	CAP FG	I	Capstan FG signal input. For capstan speed servo. Approx. 1390 Hz in SP mode REC/PB, Approx. 697 Hz in LP mode REC/PB.
69			Not used.
70	TOP/END LED ON	O	LED ON/OFF signal for detecting tape top and end. "H" pulse during tape running.
71			Not used.
72			
73	CAP PWM	O	Capstan error signal output. 20.15 μ sec. cycle PWM signal.
74	DRUM PWM	O	Drum error signal output. 20.15 μ sec. cycle PWM signal.
75	CFG HMS	I	Capstan FG signal input for tape counter.
76			Not used.
77			
78			
79	LM LIM ON	I	Loading motor driver current limiter detecting signal input. Normally "H". "L" when limiter is ON.
80			Not used.
81	DRUM ON	O	Drum motor ON/OFF control signal. Drum rotates at "H".
82	CLOG DET	I	Head clog detecting signal input. Normally "L".
83	REF PILOT	O	Reference pilot signal output for ATF servo. Synchronizes with drum rotation, switches four frequencies sequentially and outputs. f1=101.0 kHz, f2=117.2 kHz, f3=162.8 kHz, f4=146.5 kHz.

Pin No.	Signal Name	I/O	Function
84			Not used.
85	NC		Connected to GND.
86	VSS		GND.
87	VDD		+5V power supply.
88	VPP		Connected to VDD.
89	DRUM ACC	O	Drum acceleration pulse output for fH correction. Normally "L".
90	DRUM BRK	O	Drum deceleration pulse output for fH correction. Normally "L".
91	SP/LP OUT	O	SP/LP switching signal output. SP: "H", LP: "L".
92	DOC MASK (V PAKA)	O	DOC level switching signal output. "H" pulse which synchronizes with V sync during PB.
93			Not used.
94			
95	VA PB MODE	O	REC/PB switching signal output of video/audio circuit. "H" when PB.
96			Not used.
97	RF SWP(RF CONT)	O	PF switching pulse signal output. 25 Hz, duty cycle 50%.
98			Not used.
99	CAP ON	O	Capstan motor ON/OFF control signal output. Capstan rotates at "H".
100	CAP FWD/RVS	O	Capstan rotational direction control signal output. FWD direction: "H".

3-9. MODE CONTROL MICRO PROCESSOR (IC201 on MA-165 board: MB89092) PIN FUNCTIONS

Pin No.	Signal Name	I/O	Function																		
1	MOD0		Operation mode specification pin. Connected to GND.																		
2	MOD1																				
3	X0																				
4	X1		System clock oscillation circuit. 10 MHz.																		
5	VSS		GND pin.																		
6	RESET	I	Reset input. "L" when resetting.																		
7	LINE I/O SEL	O	Input/output switching signal of line input/output pin. "H" only when external pack is not connected and the mode is not playback (input condition).																		
8	PACK DET	I	Not used.																		
9	EJECT SW	I	Cassette EJECT key input. "L" when key is pressed.																		
10	POWER SW	I	POWER switch input. "L" when key is pressed.																		
11	BACK LIGHT ON	O	Liquid crystal display back light ON/OFF signal. "H" when back light ON.																		
12	START/STOP SW	I	Not used.																		
13	CC DOWN SW	I	Cassette compartment lock switch input. "L" when lock.																		
14	CAMERA STBY SW	I	Not used.																		
15	BATT IN		Fixed at "H" level.																		
16	SYSTEM SYNC(PB V)	I	VD signal input from mechanism control micro processor. Timing reference of serial data communication. V cycle "L" pulse.																		
17	SERVO V	I	Not used.																		
18	LANC POWER ON	I	POWER ON signal input by LANC. "L" when POWER is turned ON.																		
19	REC LED	O	REC LED ON/OFF signal. REC: "L".																		
20	TALLY LED	O	Camera Tally LED ON/OFF signal.																		
21			Not used.																		
22	PAUSE LED	O	Not used.																		
23	POWER LED	O	POWER LED ON/OFF signal. Power supply ON: "L".																		
24	SYSTEM RESET	O	Reset signal to mechanism control micro processor. "L" when resetting.																		
25	AD GND		For AD reference. Connected to GND.																		
26	BATT IN		Fixed at "H" level.																		
27	MARKER SI	I	Not used.																		
28	MARKER SO	O																			
29	MARKER SCK	O																			
30	RMC IN	I																			
31	MARKER RESET	O																			
32	MK REC MASK	O																			
33	CS EEPROM	O	Serial data communication chip select signal to EEPROM. V cycle "L" pulse.																		
34	CS VIDEO	O	Serial data communication chip select signal to VIDEO IC. V cycle "L" pulse.																		
35	CS MARKER	O	Not used.																		
36	CS LCD	O																			
37	D/A STB	O	D/A converter IC serial data transfer strobe signal. V cycle "H" pulse.																		
38	VIDEO MUTE	O	Video output mute signal. "H" when muting.																		
39	AUDIO MUTE	O	Audio output mute signal. "H" when muting.																		
40	OUTPUT SEL 1	O	Audio monitor switching output. <table><tr><td></td><td>Stereo</td><td>Main</td><td>Sub</td><td>Main/Sub</td><td>Monaural</td></tr><tr><td>OUTPUT SEL 1</td><td>L</td><td>H</td><td>H</td><td>L</td><td>L</td></tr><tr><td>OUTPUT SEL 2</td><td>L</td><td>H</td><td>L</td><td>L</td><td>L</td></tr></table>		Stereo	Main	Sub	Main/Sub	Monaural	OUTPUT SEL 1	L	H	H	L	L	OUTPUT SEL 2	L	H	L	L	L
	Stereo	Main	Sub	Main/Sub	Monaural																
OUTPUT SEL 1	L	H	H	L	L																
OUTPUT SEL 2	L	H	L	L	L																
41	OUTPUT SEL 2	O																			

Pin No.	Signal Name	I/O	Function												
42	MATRIX CONT 1	O	Audio matrix switching <table><tr><td></td><td>Stereo</td><td>Bilingual</td><td>Monaural</td></tr><tr><td>MATRIX CONT 1</td><td>H</td><td>H</td><td>L</td></tr><tr><td>MATRIX CONT 2</td><td>H</td><td>L</td><td>L</td></tr></table>		Stereo	Bilingual	Monaural	MATRIX CONT 1	H	H	L	MATRIX CONT 2	H	L	L
	Stereo	Bilingual		Monaural											
MATRIX CONT 1	H	H		L											
MATRIX CONT 2	H	L	L												
43	MATRIX CONT 2	O													
44	INSEL	O	Input switching signal. "H" during line input.												
45	LINE STEREO	I	Stereo/monaural discrimination input of line input pin. "H" when plug is inserted in audio input pin (right).												
46	SP ON	O	Speaker output ON/OFF signal. Speaker ON: "L".												
47	VCC		Power supply pin.												
48	SEG15	O	Not used.												
49	SEG14	O													
50	SEG13	O													
51	SEG12	O													
52	SEG11	O													
53	SEG10	O													
54	SEG09	O													
55	SEG08	O													
56	VSS		GND pin.												
57	SEG07	O	Not used.												
58	SEG06	O													
59	SEG05	O													
60	SEG04	O													
61	SEG03	O													
62	SEG02	O													
63	SEG01	O													
64	SEG00	O													
65	V3														
66	V2														
67	V1														
68	V0														
69	COM0	O													
70	COM1	O													
71	COM2	O													
72	COM3	O													
73	CS CG	O	Character generator serial data communication chip select signal. V cycle "L" pulse.												
74	CS COSMO	O	Serial data communication chip select signal to mechanism control micro processor. V cycle "L" pulse.												
75	SI BUS	I	Serial data communication data input. V cycle "L" pulse row.												
76	SO BUS	O	Serial data communication data output. V cycle "L" pulse row.												
77	SCK	O	Clock for serial data communication.												
78			Not used.												
79	POWER ON	O	Power supply ON/OFF control signal. Power supply ON: "H".												
80	MONITOR ON	O	External monitor power supply ON/OFF control signal. Power supply ON: "L".												
81	AVSS		GND pin.												
82	KEY AD IN 0	I	Key input signal. 0V: REC, 0.9V: STOP, 1.5V: FF, 2.2V: PLAY, 2.8V: SLOW, 5V: No input.												
83	KEY AD IN 1	I	Key input signal. 0V: PAUSE, 0.9V: REW, 1.5V: COUNTER RESET, 2.2V: DATA SCREEN, 5V: No input.												

Pin No.	
84	K
85	K
86	E
87	S
88	P
89	A
90	A
91	E
92	E
93	L
94	L
95	L
96	L
97	
98	
99	C
100	C

condition).

al

Pin No.	Signal Name	I/O	Function												
42	MATRIX CONT 1	O	Audio matrix switching <table><tr><td></td><td>Stereo</td><td>Bilingual</td><td>Monaural</td></tr><tr><td>MATRIX CONT 1</td><td>H</td><td>H</td><td>L</td></tr><tr><td>MATRIX CONT 2</td><td>H</td><td>L</td><td>L</td></tr></table>		Stereo	Bilingual	Monaural	MATRIX CONT 1	H	H	L	MATRIX CONT 2	H	L	L
	Stereo	Bilingual		Monaural											
MATRIX CONT 1	H	H		L											
MATRIX CONT 2	H	L	L												
43	MATRIX CONT 2	O													
44	INSEL	O	Input switching signal. "H" during line input.												
45	LINE STEREO	I	Stereo/monaural discrimination input of line input pin. "H" when plug is inserted in audio input pin (right).												
46	SP ON	O	Speaker output ON/OFF signal. Speaker ON: "L".												
47	VCC		Power supply pin.												
48	SEG15	O	Not used.												
49	SEG14	O													
50	SEG13	O													
51	SEG12	O													
52	SEG11	O													
53	SEG10	O													
54	SEG09	O													
55	SEG08	O													
56	VSS		GND pin.												
57	SEG07	O	Not used.												
58	SEG06	O													
59	SEG05	O													
60	SEG04	O													
61	SEG03	O													
62	SEG02	O													
63	SEG01	O													
64	SEG00	O													
65	V3														
66	V2														
67	V1														
68	V0														
69	COM0	O	Not used.												
70	COM1	O													
71	COM2	O													
72	COM3	O													
73	CS CG	O													
74	CS COSMO	O	Character generator serial data communication chip select signal. V cycle "L" pulse.												
75	SI BUS	I	Serial data communication chip select signal to mechanism control micro processor. V cycle "L" pulse.												
76	SO BUS	O	Serial data communication data input. V cycle "L" pulse row.												
77	SCK	O	Serial data communication data output. V cycle "L" pulse row.												
78			Clock for serial data communication.												
79	POWER ON	O	Not used.												
80	MONITOR ON	O	Power supply ON/OFF control signal. Power supply ON: "H".												
81	AVSS		External monitor power supply ON/OFF control signal. Power supply ON: "L".												
82	KEY AD IN 0	I	GND pin.												
83	KEY AD IN 1	I	Key input signal. 0V: REC, 0.9V: STOP, 1.5V: FF, 2.2V: PLAY, 2.8V: SLOW, 5V: No input.												
			Key input signal. 0V: PAUSE, 0.9V: REW, 1.5V: COUNTER RESET, 2.2V: DATA SCREEN, 5V: No input.												

Pin No.	Signal Name	I/O	Function
84	KEY AD IN 2	I	Key input signal. 0V: VOLUME+, 0.9V: VOLUME-, 1.5V: BRIGHT +, 2.2V: BRIGHT -, 2.8V: MENU, 3.4V: ENTER, 5V: No input.
85	KEY AD IN 3	I	Not used.
86	EXT CTL	I	External pack control signal input.
87	ST/BI DET	I	Playback AFM STEREO/BILINGUAL detection input. 0V: Stereo, 2V: Monaural, 5V: Bilingual
88	P/N443/P60	I	Not used.
89	AUDIO SEL	I	
90	AVCC		Power supply pin.
91	EXT POWER ON	O	External pack power supply ON/OFF control signal. Power supply ON: "L".
92	E MODE	O	Normal/Hi8 switching signal. "H" when playing back a Hi8 tape recorded.
93	LINE AU BI/ST	I	Not used.
94	LCD ON/OFF	I	Liquid crystal display section open/close signal input. "H" when open.
95	LANC IN	I	LANC data input. V cycle "H" pulse row.
96	LANC OUT	O	LANC data output. V cycle "H" pulse row.
97			Not used.
98			Fixed at "H" level.
99	CL1		Sub-clock oscillation circuit. 32 kHz.
100	CL0		

3-10. INTERFACE

3-10-1. System Control – Video and Audio Block Interfaces (MA-165 Board)

Signal Name	I/O	Pin No.	VTR Mode												CAMERA Mode	
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB- PAUSE	SLOW	REC	REC PAUSE	STAND BY	REC
						CUE	REVIEW		CUE	REVIEW						
SP/ $\overline{\text{LP}}$	O	IC101 $\textcircled{\text{11}}$	*1	H	H	*2	*2	*2	*2	*2	*1	*1	*14	H/L	H/L	*14
VA PB MODE	O	IC101 $\textcircled{\text{5}}$	L	L	L	H	H	H	H	H	H	H	L	L	L	L
JOG VD	O	IC101 $\textcircled{\text{3}}$	L	L	L	*5	*5	L	*5	*5	*5	*5	L	L	L	L
RP PB MODE	O	IC101 $\textcircled{\text{1}}$	H	H	H	H	H	H	H	H	H	H	L	H	H	L
$\overline{\text{FE}}$ ON	O	IC101 $\textcircled{\text{2}}$	H	H	H	H	H	H	H	H	H	H	L	H	H	L
RF SWP	O	IC101 $\textcircled{\text{7}}$	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
JOG	O	IC101 $\textcircled{\text{4}}$	L	L	L	H	H	L	H	H	H	H	L	L	L	L
SP/ $\overline{\text{LP}}$ DET	I	IC101 $\textcircled{\text{5}}$	L	*10	*10	*10	*10	L	*10	*10	*10		H	H	H	H
CLOG DET	I	IC101 $\textcircled{\text{22}}$	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	H	*11	*11	H
VTR SYNC	I	IC101 $\textcircled{\text{64}}$	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12
DOC MASK	O	IC101 $\textcircled{\text{22}}$	L	L	L	L	L	*13	L	L	L	L	L	L	L	L
VIDEO MUTE *15	O	IC101 $\textcircled{\text{38}}$	L	L	L	L	L	L	L	L	L	L	L	L	L	L
STILL-SLOW	O	IC101 $\textcircled{\text{26}}$	L	L	L	L	L	L	L	L	H	H	L	L	L	L
AUDIO MUTE	O	IC201 $\textcircled{\text{39}}$	L	L	L	H	H	L	H	H	H	H	L	L	L	L
LINE I/ $\overline{\text{O}}$ SEL	O	IC201 $\textcircled{\text{7}}$	H	H	H	L	L	L	L	L	L	L	H	H	L	L
CS VIDEO	O	IC201 $\textcircled{\text{34}}$	V cycle "L" pulse													
$\overline{\text{D/A}}$ STB	O	IC201 $\textcircled{\text{37}}$	V cycle "H" pulse													
SO BUS	O	IC201 $\textcircled{\text{76}}$	V cycle pulse row													
SCK	O	IC201 $\textcircled{\text{77}}$	V cycle "L" pulse row													

*1. Outputs the discrimination results of the mode just before. SP mode: "H", LP mode: "L".

*2. Outputs the discrimination results of the recording mode of the tape played back. SP mode: "H", LP mode: "L".

*5. False VD signal.

*7. 50% pulse of 25 Hz duty (synchronizes with drum rotation)

*10. "H" at SP recorded section of tape, "L" at LP recorded section.

*11. "H" at unrecorded section of tape or drop out section. Head clog detection input.

*12. Composite sync signal input separated from line input video signal, camera video signal or playback video signal. (Polarity +)

*13. 50 Hz pulse which is "H" for 1.3 msec. from the changing point of RF SWP.

*14. Changes by SP/LP switching. SP mode: "H", LP mode: "L".

*15. "H" when the mode shifts from STOP to PB.

3-10-2. Mechanism Control – Servo Block Interface (MA-165 Board)

Signal Name	I/O	Pin No.	VTR Mode												CAMERA Mode	
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB-PAUSE	SLOW	REC	REC PAUSE	STAND BY	REC
						CUE	REVIEW		CUE	REVIEW						
T.REEL FG	I	IC101 60	—	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	—	—	*1
S.REEL FG	I	IC101 59	—	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	—	—	*1
ATF ERROR	I	IC101 58	—	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	IC101 66	—	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	IC101 67	—	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG/ CFG HMS	I	IC101 68, 65	—	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	IC101 69	L	H	H	H	H	H	H	H	L	*8	H	L	L	H
REF PILOT	O	IC101 63	*7	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RP PB MODE	O	IC101 ①	H	H	H	H	H	H	H	H	H	H	L	H	H	L
DRUM FWD/RVS *10	O	IC101 33	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CAP FWD/RVS	O	IC101 10	L	H	L	H	L	H	H	L	L	*8	H	L	L	H
DRUM PWM	O	IC101 74	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP PWM	O	IC101 73	L	*9	*9	*9	*9	*9	*9	*9	L	*9	*9	L	L	*9
LM LIM CONT *11	O	IC101 31	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON *12	O	IC101 61	L	H	H	H	H	H	H	H	H	H	H	H	H	H
DRUM ACC	O	IC101 69	L	L	L	L	L	L	L	L	L	*8	L	L	L	L
DRUM BRK	O	IC101 60	L	L	L	L	L	L	L	L	L	*8	L	L	L	L

- *1. A pulse whose amplitude has been modulated by the rotation of the reel is input. (200 msec. cycle during REC/PB).

*2. ATF error voltage input.

*3. One PG pulse is input with one drum rotation. Approx. 25 Hz.

*4. Six FG pulses are input with one drum rotation. Approx. 300 Hz.

*5. 520 FG pulses are input with one capstan rotation. Approx. 1390 Hz during REC/PB (SP).

*6. Outputs four frequencies synchronized with the rotation of the drum. f₁=101.0 kHz, f₂=117.2 kHz, f₃=162.8 kHz, f₄=146.5 kHz.
- *7. Outputs f₂ (117.2 kHz).

*8. "H" pulse when the tape is run.

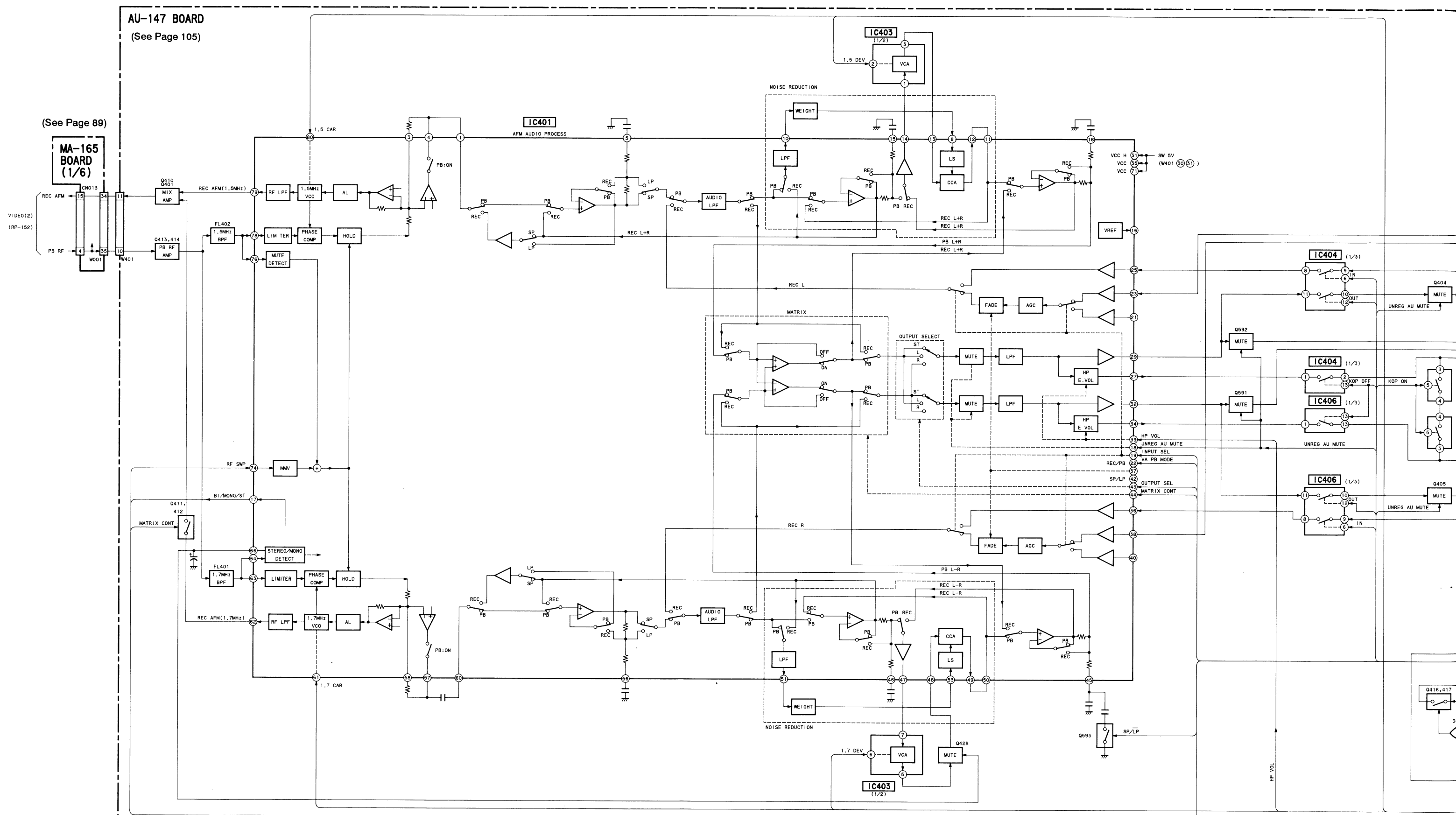
*9. 21.5 μsec. cycle PWM signal.

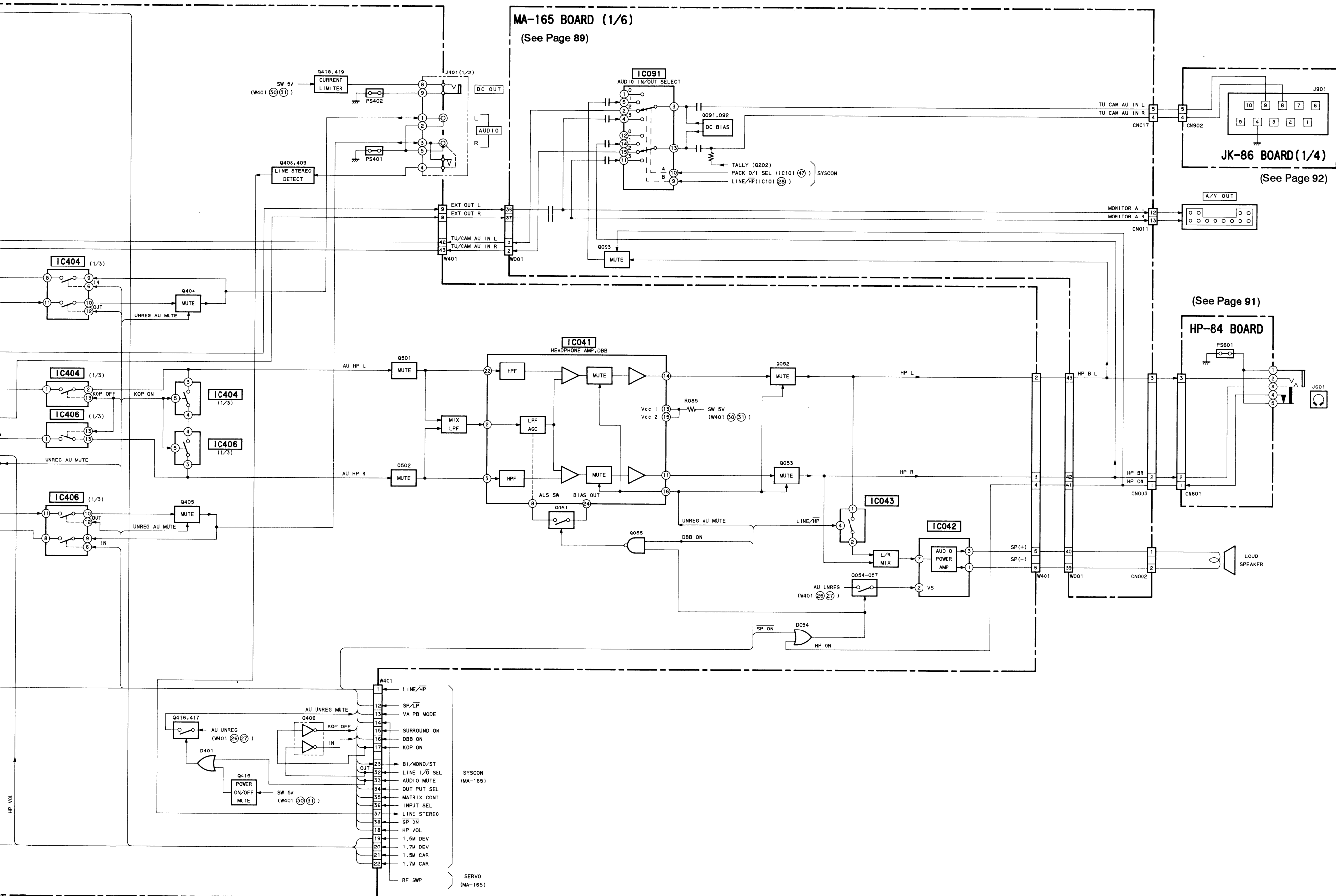
*10. Normally "H". Temporarily "L" only during load/unload (drum reversal).

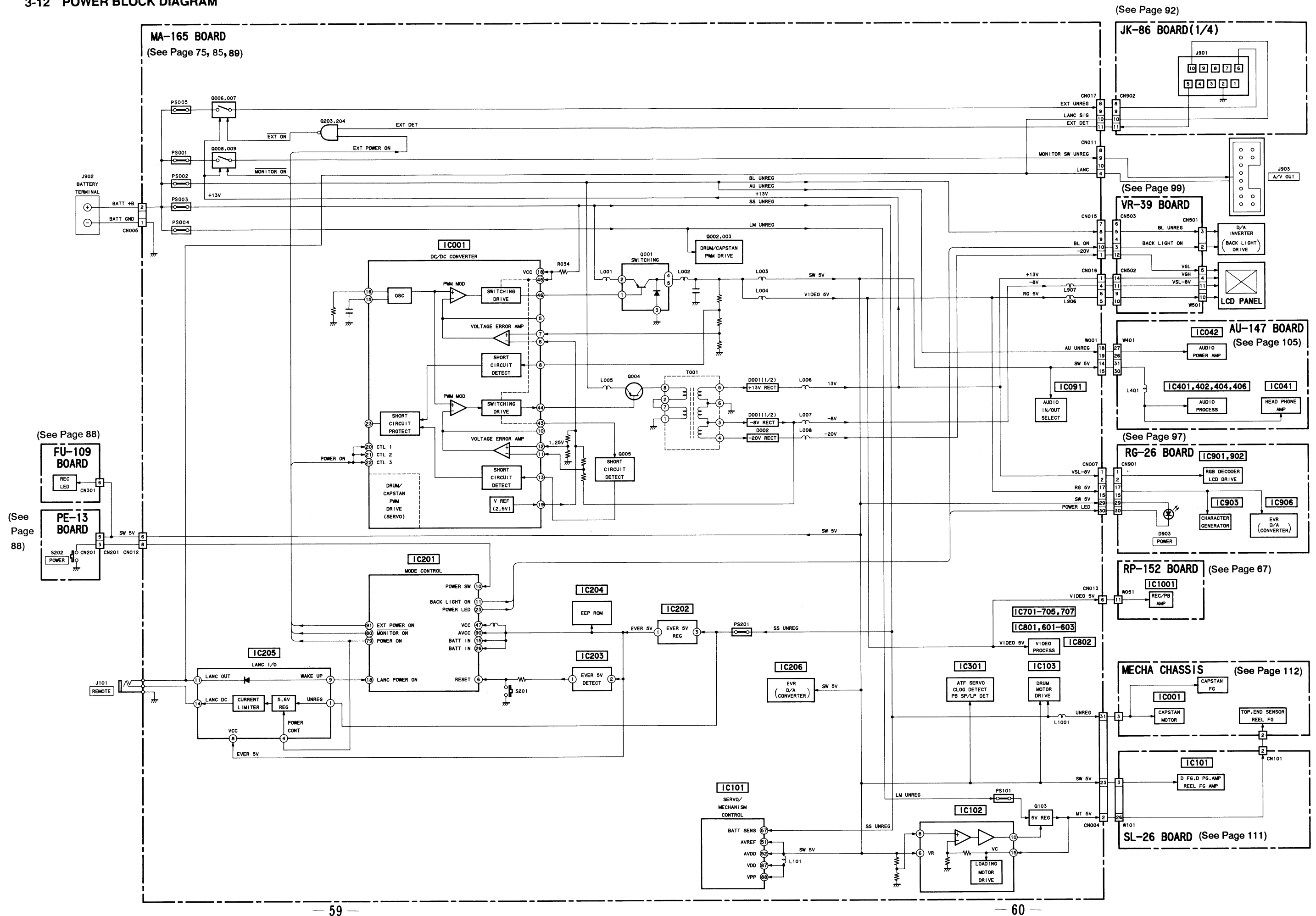
*11. Temporarily "H" only during cassette loading (To prevent your finger from being caught).

*12. H level is approx. 1.3 Vdc.

3-11. AUDIO BLOCK DIAGRAM



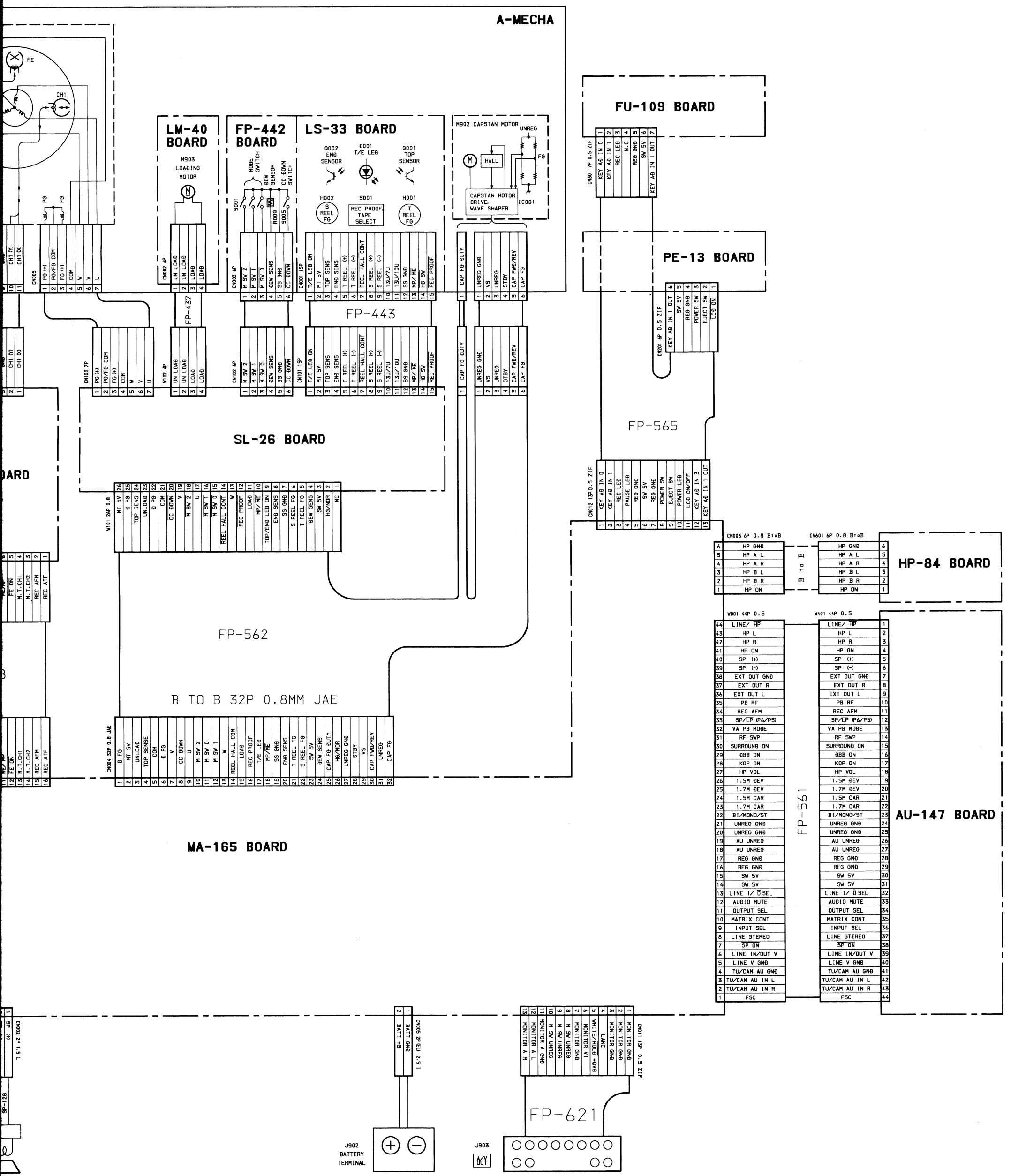




4-1. FRAME SCHEMATIC DIAGRAM



9 10 11 12 13 14 15 16 17 18 19 20



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this , the necessary note is printed in each block.)

- For printed wiring boards.
- ○ : Through hole
- ■ : Pattern from the side which enables seeing.
(The other layer's patterns are not indicated.)
- Circled numbers refer to waveforms.

* Caution:

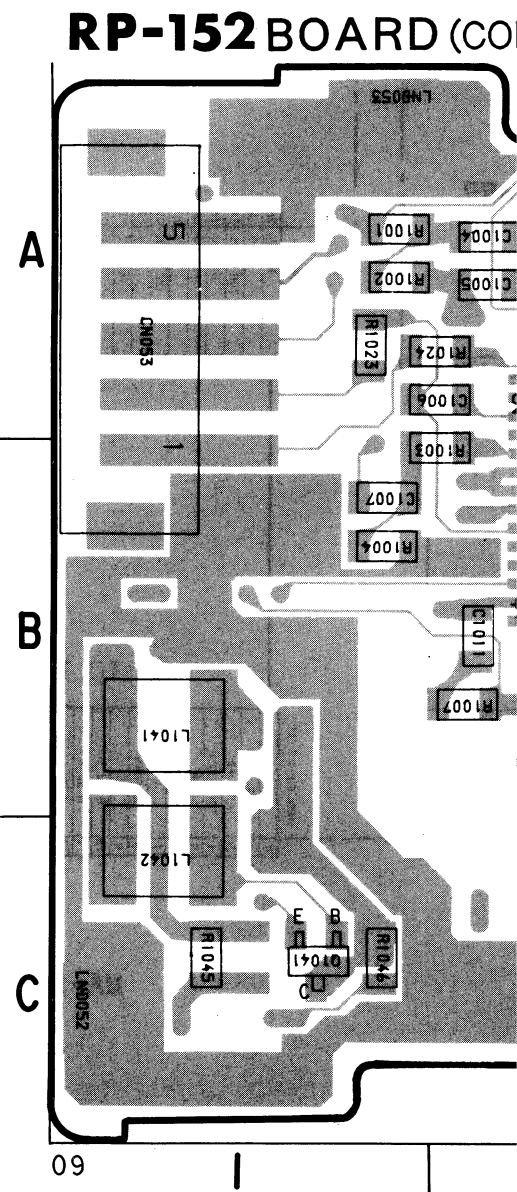
Pattern face side:	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side:	Parts on the parts face side seen from the parts face are indicated.

- For schematic diagrams.
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- Chip resistor are 1/10W unless otherwise noted.
kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μ μ F.
50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
-  : nonflammable resistor.
-  : fusible resistor.
-  : panel designation.
- △ : internal component.
-  : adjustment for repair.*
- — : B+ Line.*
- - - - : B- Line.*
-  : IN/OUT direction of (+, -) B LINE.*
- Circled numbers refer to waveforms.*
- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

Note:
The components identi- fied by mark △ or dotted line with mark △ are critical for safty.
Replace only with part number specified.

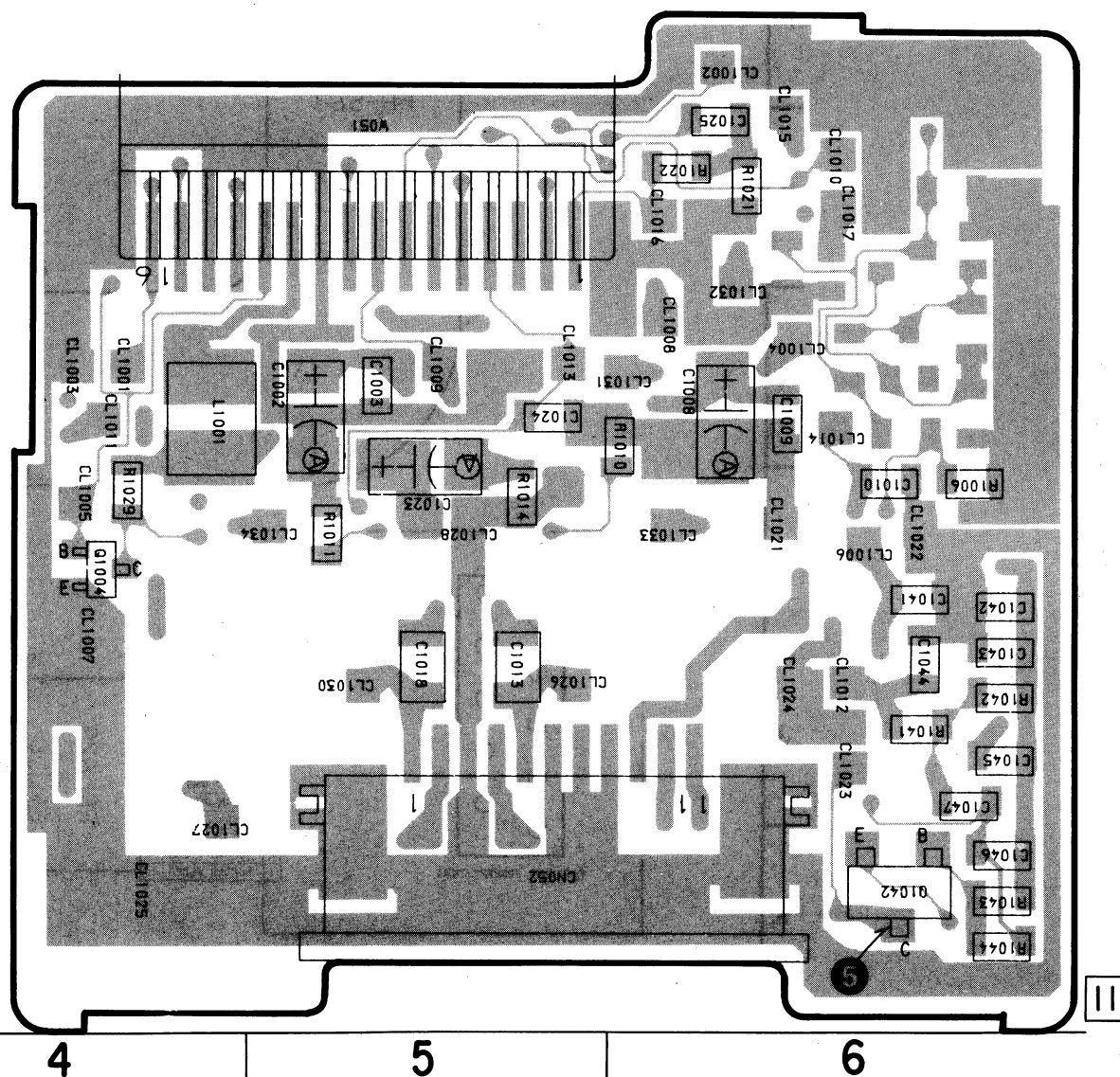
*: indicated by the color red.

RP-152 (REC/PB HEAD AMPLIFIER) SCHE



- For printed wiring boards.
- ○ : Through hole is omitted.

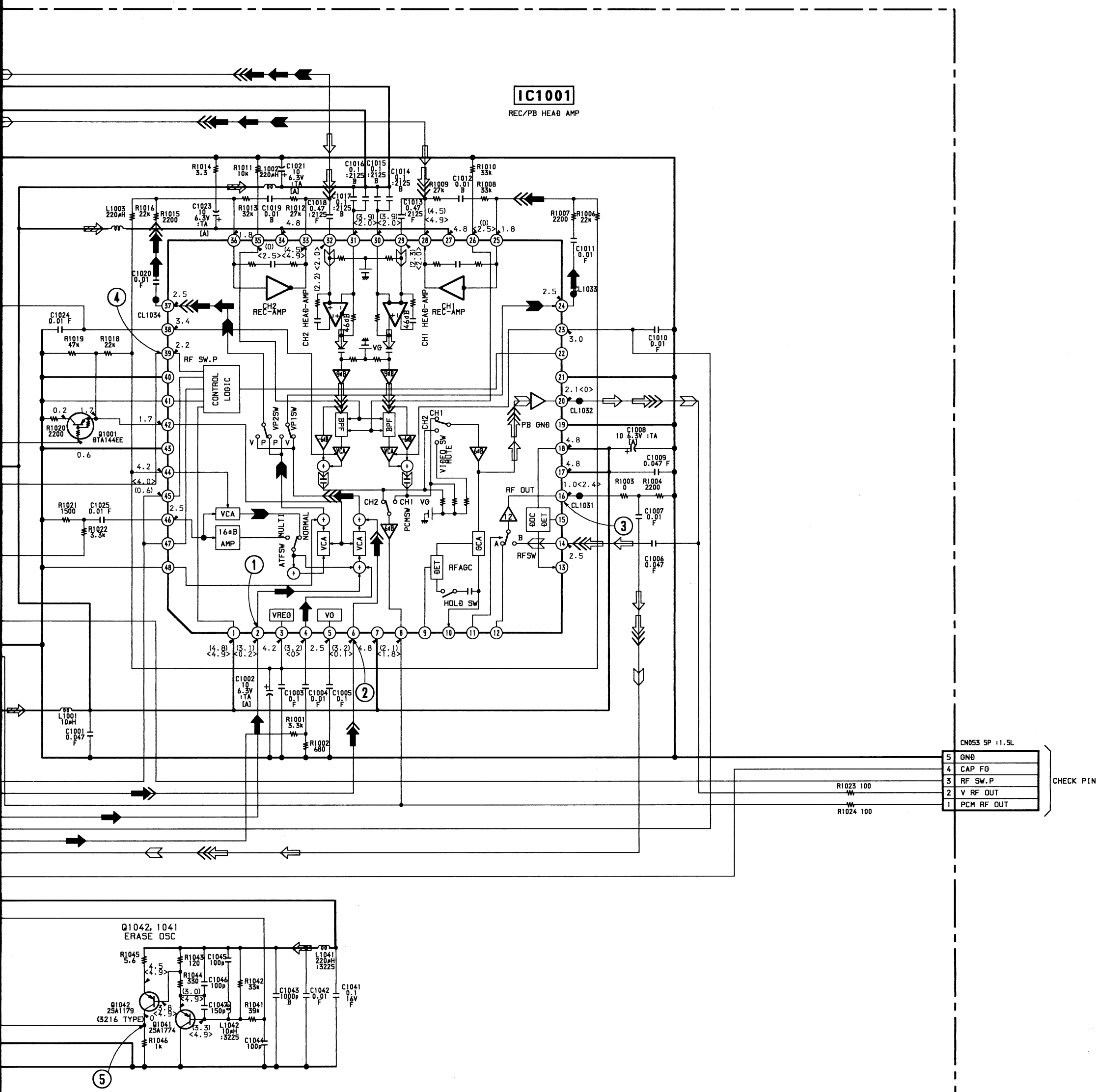
RP-152 BOARD (CONDUCTOR SIDE)



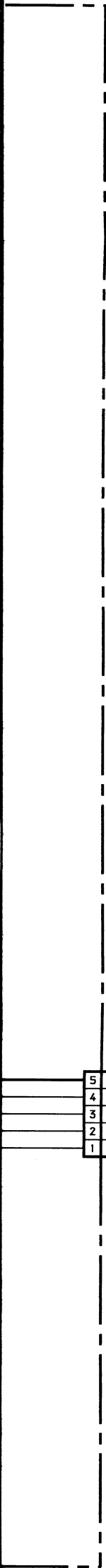
8-729-928-27	TRANSISTOR	DTA144EE
8-729-928-81	TRANSISTOR	DTC144EE
8-729-928-19	TRANSISTOR	2SA1774R
8-729-820-76	TRANSISTOR	2SA1179-M5M6

1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---





17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28

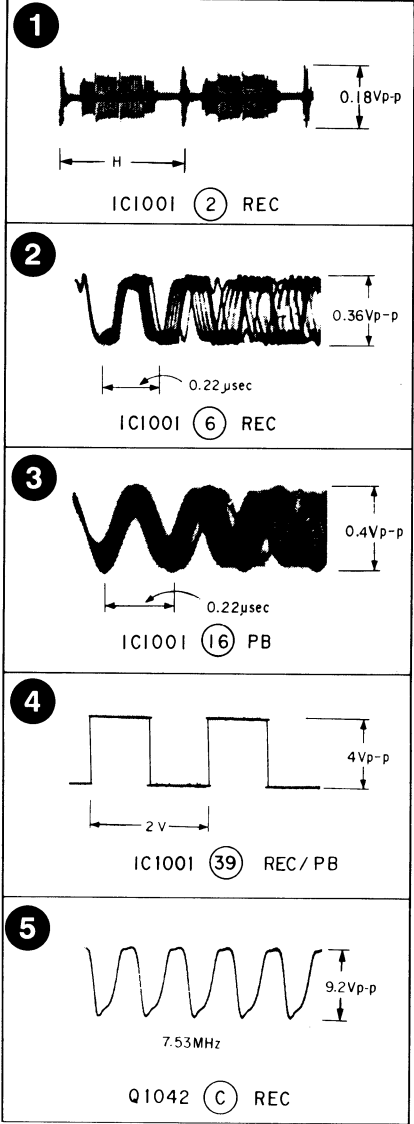


• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	➡
PB			➡➡➡	➡

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal	➡➡		➡➡

RP-152 BOARD



MA-165 BOARD

D001	B-22
D002	B-22
D004	H-19
D101	H-3
D199	I-15
D301	E-1
D310	H-22
D601	I-15
D602	H-8
D603	G-7
D701	D-16
D702	G-8
D803	A-10
D804	C-9
D805	A-8
D806	A-15
D1000	H-1
D1001	G-18
D1002	C-6

IC202	C-6
IC203	C-5
IC204	B-6
IC205	D-6
IC206	B-5
IC301	F-2
IC601	H-15
IC602	C-8
IC603	I-17
IC701	F-10
IC702	F-13
IC703	F-15
IC704	C-8
IC705	E-16
IC707	F-15
IC801	C-14
IC802	B-14
IC804	C-13
IC805	B-16

Q007	H-7
Q008	I-7
Q009	H-6
Q010	I-18
Q012	H-19
Q091	I-23
Q092	I-23
Q093	F-1
Q101	G-2
Q103	I-5
Q202	B-20
Q203	E-5
Q301	G-3
Q310	I-23
Q311	I-22
Q312	J-21
Q313	H-3
Q609	H-13
Q611	H-13
Q613	H-11
Q616	H-14
Q617	G-11
Q618	H-11
Q619	H-10
Q621	H-15
Q622	H-14

Q623	H-15
Q625	H-14
Q626	I-10
Q627	I-8
Q628	I-8
Q629	H-9
Q630	I-10
Q631	H-9
Q632	H-10
Q633	H-8
Q634	H-10
Q701	G-13
Q702	G-14
Q703	F-14
Q705	F-8
Q706	G-14
Q707	G-13
Q708	F-8
Q712	B-8
Q713	B-8
Q714	B-8
Q715	B-8
Q716	B-8
Q717	G-11
Q719	F-14
Q720	F-14

Q721	E-15
Q722	E-9
Q724	E-8
Q725	G-10
Q730	G-15
Q732	E-15
Q755	G-15
Q760	F-8
Q761	F-16
Q765	G-16
Q766	G-16
Q768	G-16
Q801	C-15
Q802	C-15
Q803	C-13
Q804	C-13
Q805	E-11
Q806	D-14
Q807	C-10
Q809	A-13
Q810	A-13
Q811	B-13
Q812	B-13
Q813	B-13
Q814	B-11
Q815	B-10

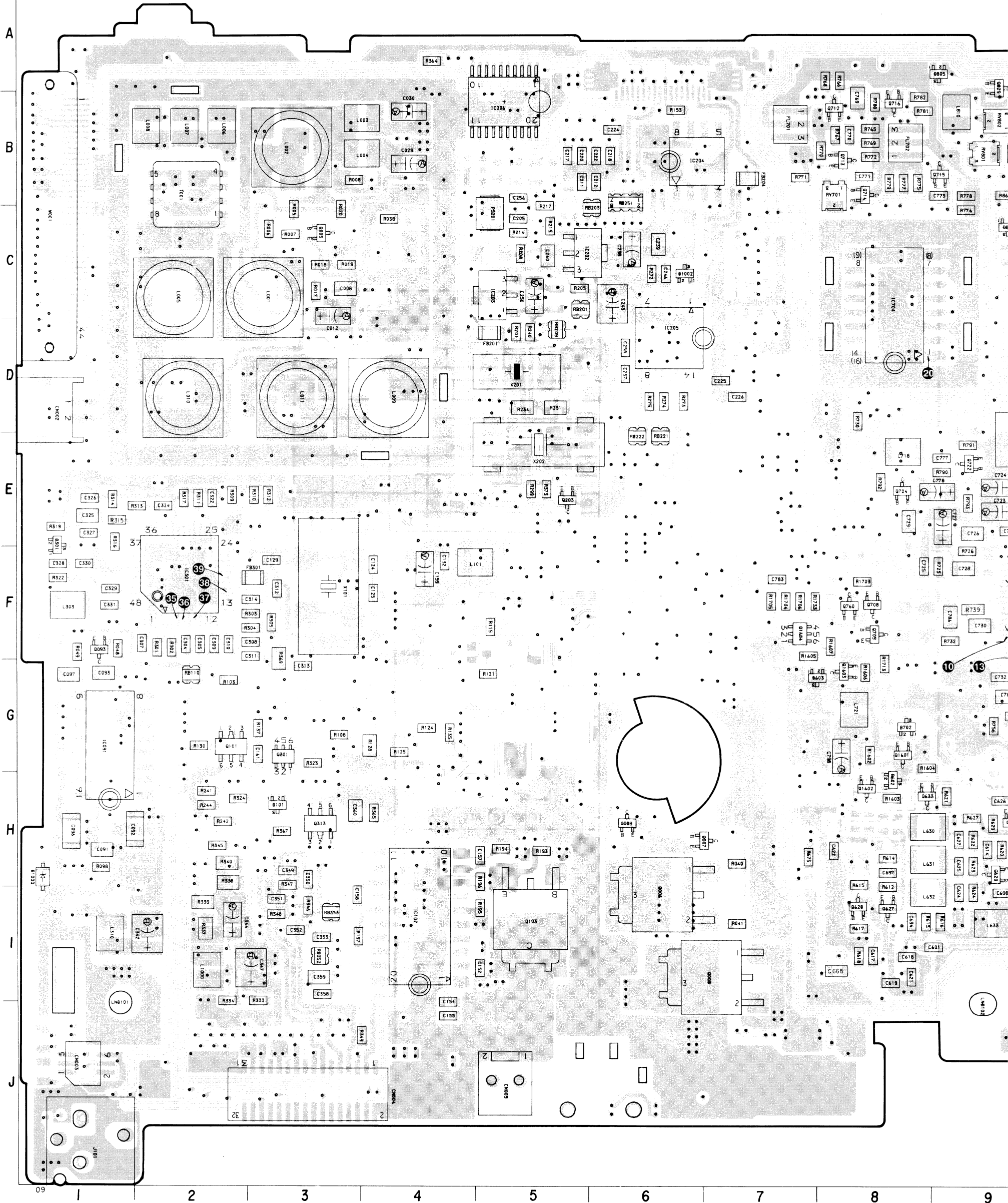
Q816	B-9
Q817	B-10
Q818	B-9
Q819	B-10
Q820	D-10
Q821	A-15
Q822	C-11
Q823	A-14
Q824	A-14
Q825	C-13
Q826	C-15
Q827	C-15
Q828	C-15
Q829	A-9
Q1601	G-8
Q1602	H-8
Q1603	G-8
Q1604	F-7
Q1605	H-14
Q1801	G-17
Q1802	G-17
Q1803	G-17

D001	8-719-989-33	DIODE	FC806
D002	8-719-989-03	DIODE	DAN222
D004	8-719-991-00	DIODE	DAP222
D101	8-719-989-03	DIODE	DAN222
D199	8-719-422-91	DIODE	MA8091
D301	8-719-989-00	DIODE	DA221
D310	8-719-989-03	DIODE	DAN222
D601	8-719-951-22	DIODE	IMN10
D602	8-719-989-03	DIODE	DAN222
D603	8-719-989-03	DIODE	DAN222
D701	8-719-989-03	DIODE	DAN222
D702	8-719-989-03	DIODE	DAN222
D803	8-719-989-03	DIODE	DAN222
D804	8-719-989-03	DIODE	DAN222
D805	8-719-989-03	DIODE	DAN222
D806	8-719-989-03	DIODE	DAN222
D1000	8-719-422-91	DIODE	MA8091
D1001	8-719-422-91	DIODE	MA8091
D1002	8-719-989-03	DIODE	DAN222

IC001	8-759-060-94	IC	MB3785APFV-G-BND-ER
IC091	8-759-509-13	IC	XRU4052BF
IC101	8-752-836-14	IC	CXP80624A
IC102	8-759-039-01	IC	MPC1720M
IC103	8-759-990-55	IC	CXA8006M
IC201	8-759-158-53	IC	MB89093
IC202	8-759-512-69	IC	S-81350HG-KD
IC203	8-759-946-03	IC	S-8054ALR-LN-S
IC204	8-759-044-78	IC	AK6420F
IC205	8-759-999-02	IC	TL1596CDB
IC206	8-759-635-27	IC	M62352GP
IC301	8-759-512-42	IC	CXA1481R
IC601	8-759-012-00	IC	MC10H116M
IC602	8-752-053-21	IC	CXA1211M
IC603	8-759-073-33	IC	CXD-2107M
IC701	8-752-065-54	IC	CXA1207AR
IC702	8-752-053-21	IC	CXA1211M
IC703	8-759-636-33	IC	CXA1452
IC704	8-752-333-24	IC	CXL1506M
IC705	8-759-635-27	IC	M62352GP

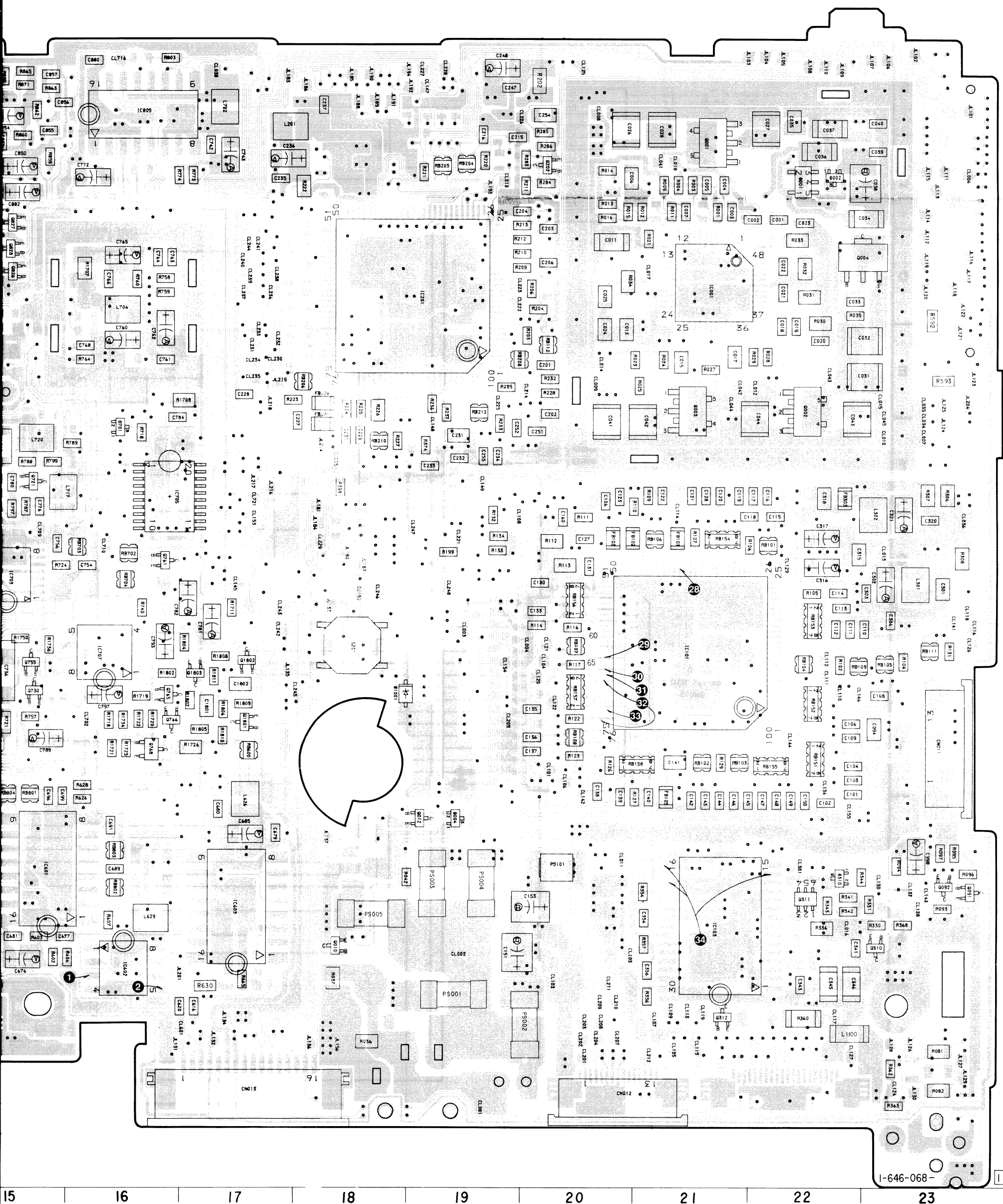
IC707	8-759-7
IC801	8-752-0
IC802	8-752-0
IC804	8-759-0
IC805	8-759-0

MA-165BOARD (COMPONENT SIDE)





9-927-XX TRANSISTOR	2SC4617R	0724	8-729-928-19 TRANSISTOR	2SA1774R	0811	8-729-927-XX TRANSISTOR	2SC4617R	01602	8-729-928-81 TRANSISTOR	DTC144EE
9-927-XX TRANSISTOR	2SC4617R	0725	8-729-928-81 TRANSISTOR	DTC144EE	0812	8-729-927-XX TRANSISTOR	2SC4617R	01603	8-729-928-19 TRANSISTOR	2SA1774R
9-928-81 TRANSISTOR	DTC144EE	0730	8-729-928-81 TRANSISTOR	DTC144EE	0813	8-729-927-XX TRANSISTOR	2SC4617R	01604	8-729-930-13 TRANSISTOR	UMH2
9-928-81 TRANSISTOR	DTC144EE	0732	8-729-927-XX TRANSISTOR	2SC4617R	0814	8-729-927-XX TRANSISTOR	2SC4617R	01605	8-729-928-81 TRANSISTOR	DTC144EE
9-202-38 TRANSISTOR	2SC3326N-A	0755	8-729-927-XX TRANSISTOR	2SC4617R	0815	8-729-928-81 TRANSISTOR	DTC144EE	01801	8-729-927-XX TRANSISTOR	2SC4617R
9-202-38 TRANSISTOR	2SC3326N-A	0760	8-729-927-XX TRANSISTOR	2SC4617R	0816	8-729-928-27 TRANSISTOR	DTA144EE	01802	8-729-927-XX TRANSISTOR	2SC4617R
9-928-81 TRANSISTOR	DTC144EE	0761	8-729-927-XX TRANSISTOR	2SC4617R	0817	8-729-930-00 TRANSISTOR	UMD2	01803	8-729-928-27 TRANSISTOR	DTA144EE
9-928-27 TRANSISTOR	DTA144EE	0765	8-729-927-XX TRANSISTOR	2SC4617R	0818	8-729-930-13 TRANSISTOR	UMH2			
9-928-81 TRANSISTOR	DTC144EE	0766	8-729-928-19 TRANSISTOR	2SA1774R	0819	8-729-928-81 TRANSISTOR	DTC144EE			
9-928-81 TRANSISTOR	DTC144EE	0768	8-729-905-35 TRANSISTOR	2SC4081-R	0820	8-729-928-81 TRANSISTOR	DTC144EE			
9-928-19 TRANSISTOR	2SA1774R	0801	8-729-927-XX TRANSISTOR	2SC4617R	0821	8-729-928-81 TRANSISTOR	DTC144EE			
9-927-XX TRANSISTOR	2SC4617R	0802	8-729-928-81 TRANSISTOR	DTC144EE	0822	8-729-928-81 TRANSISTOR	DTC144EE			
9-927-XX TRANSISTOR	2SC4617R	0803	8-729-928-81 TRANSISTOR	DTC144EE	0823	8-729-928-81 TRANSISTOR	DTC144EE			
9-928-19 TRANSISTOR	2SA1774R	0804	8-729-927-XX TRANSISTOR	2SC4617R	0824	8-729-928-81 TRANSISTOR	DTC144EE			
9-927-XX TRANSISTOR	2SC4617R	0805	8-729-928-19 TRANSISTOR	2SA1774R	0825	8-729-927-XX TRANSISTOR	2SC4617R			
9-927-XX TRANSISTOR	2SC4617R	0806	8-729-927-XX TRANSISTOR	2SC4617R	0826	8-729-928-81 TRANSISTOR	DTC144EE			
9-927-XX TRANSISTOR	2SC4617R	0807	8-729-930-13 TRANSISTOR	UMH2	0827	8-729-928-81 TRANSISTOR	DTC144EE			
9-927-XX TRANSISTOR	2SC4617R	0808	8-729-928-81 TRANSISTOR	DTC144EE	0828	8-729-928-27 TRANSISTOR	DTA144EE			
9-927-XX TRANSISTOR	2SC4617R	0809	8-729-928-81 TRANSISTOR	DTC144EE	0829	8-729-928-81 TRANSISTOR	DTC144EE			
9-927-XX TRANSISTOR	2SC4617R	0810	8-729-102-07 TRANSISTOR	2SC2223-F13	01601	8-729-928-19 TRANSISTOR	2SA1774R			



A
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1 IC602 (3) REC	15 IC701 (43) PB
2 IC602 (5) REC	16 IC701 (45) PB
3 IC701 (3) REC/PB	17 IC701 (47, 50) PB
4 IC701 (7) REC	18 IC701 (57) REC
5 IC701 (13) REC	19 IC702 (7) REC/PB
6 IC701 (13) PB	20 IC704 (1) PB
7 IC701 (19) PB	21 IC801 (8, 12) REC/PB
8 IC701 (25) REC/PB	22 IC801 (32, 36) PB
9 IC701 (28) REC	23 IC801 (38) PB
10 IC701 (30) REC	24 IC801 (40) REC
11 IC701 (30) PB	25 IC801 (42) PB
12 IC701 (32) REC	26 IC801 (46) REC/PB
13 IC701 (38) PB	27 IC801 (47) REC/PB
14 IC701 (43) REC	

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡	
PB	➡	➡➡	➡➡➡	

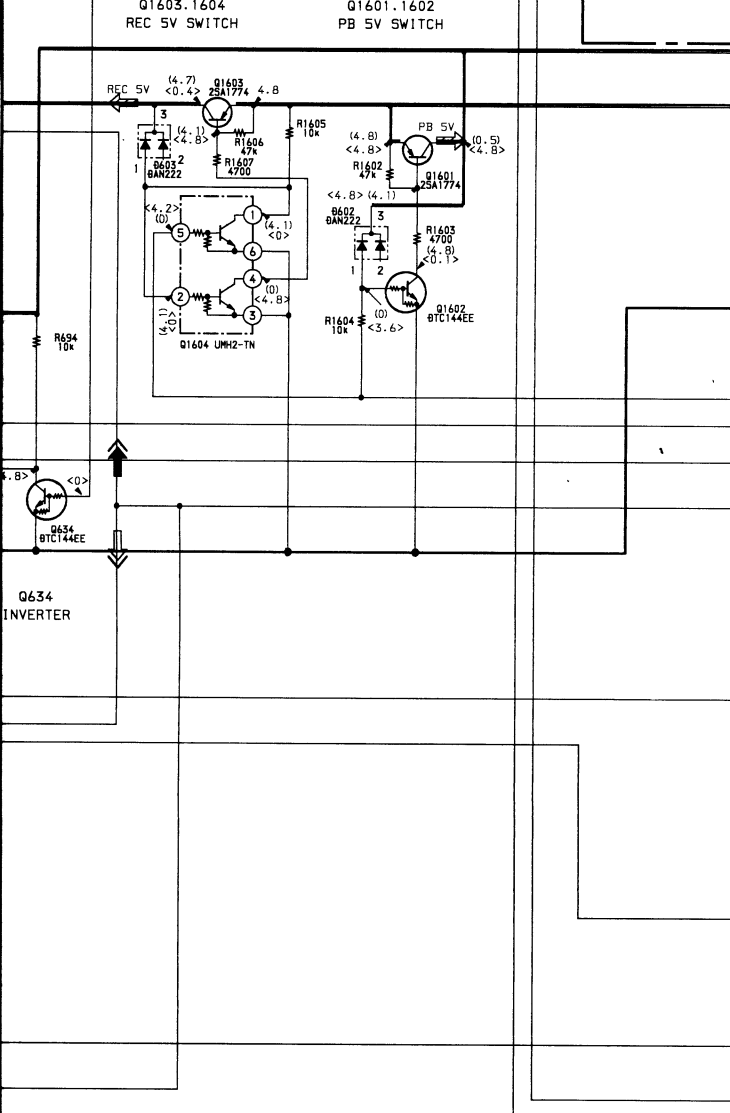
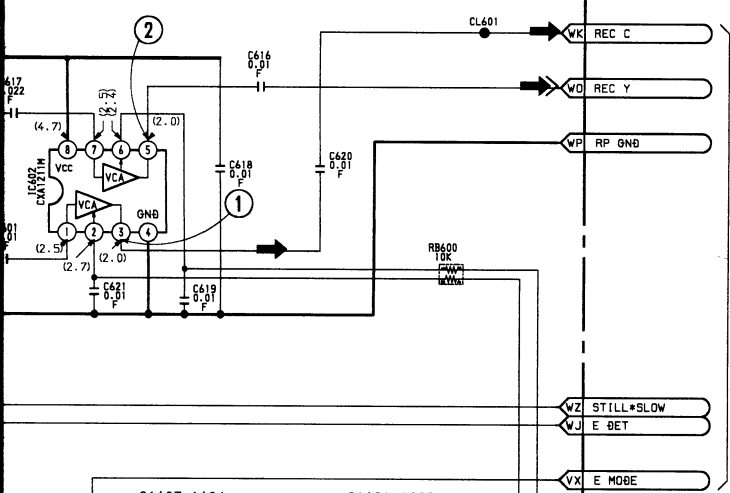
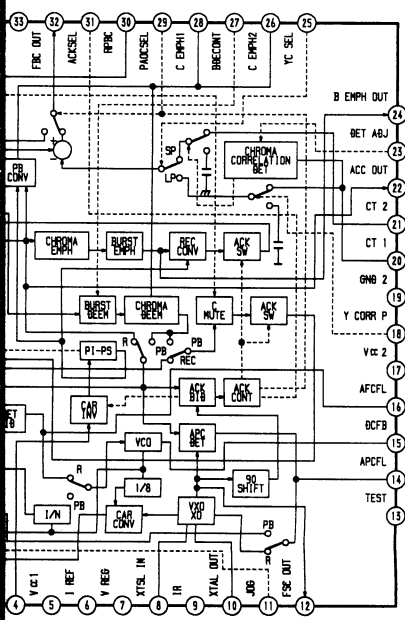
The diagram illustrates a video receiver circuit, specifically a PAL decoder and video processor section. It features several integrated circuits (ICs) and discrete components:

- IC601 (Q629.631.633 OTL)**: A central IC, likely a video processor or amplifier, with multiple pins and internal circuitry.
- IC602 (Q627.628 HALF TRAP)**: A half-trap IC, used for signal processing.
- IC603 (E/L DISCRIMINATOR)**: An E/L discriminator IC, used for signal discrimination.
- IC604 (Q623.626.630.632 SOFT LIMITER)**: A soft limiter IC, used for signal limiting.

The circuit includes various other components and sections:

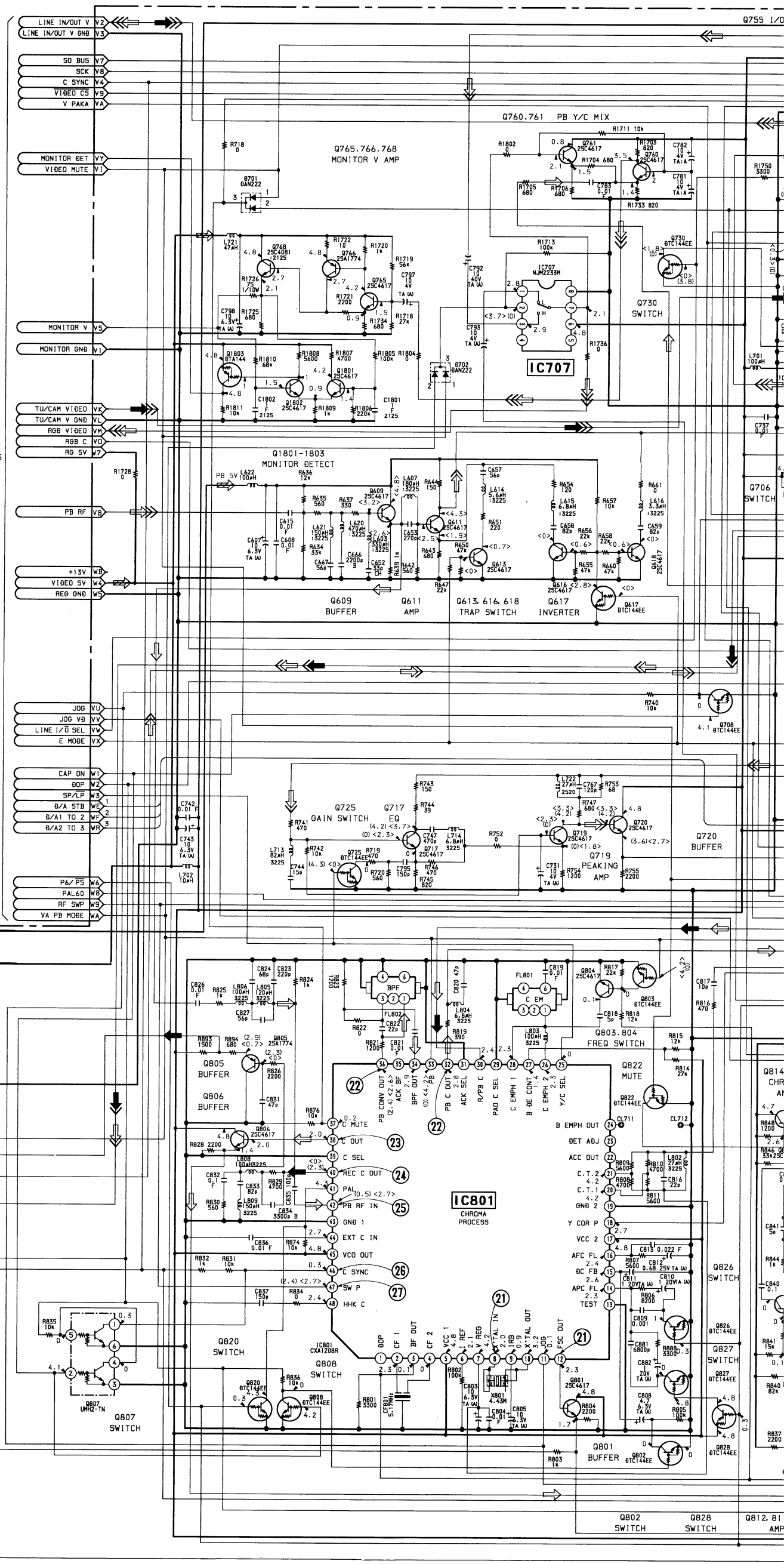
- Q619 L/E SWITCH**: A switch for L/E (Line Error) control.
- Q622.1605 FREQUENCY CHARACTER SWITCH**: A switch for frequency character control.
- Q621 L/E SWITCH**: Another switch for L/E control.
- Q625 DO SEITCH**: A switch for DO (Data Output) control.
- Q623.626.630.632 SOFT LIMITER**: A soft limiter section.
- Q627.628 HALF TRAP**: A half-trap section.
- Q634 INVERTER**: An inverter section.

The diagram shows a complex network of resistors (R601-R699), capacitors (C601-C699), and transistors (Q601-Q699). It also includes a power supply section with a 10 6.3V 1A transformer (L626) and a 5V regulator (PB 5V). The circuit is designed for a PAL decoder and video processor, with various control lines and signal paths indicated by arrows and labels.



(See Page 89)

(See Page 90)



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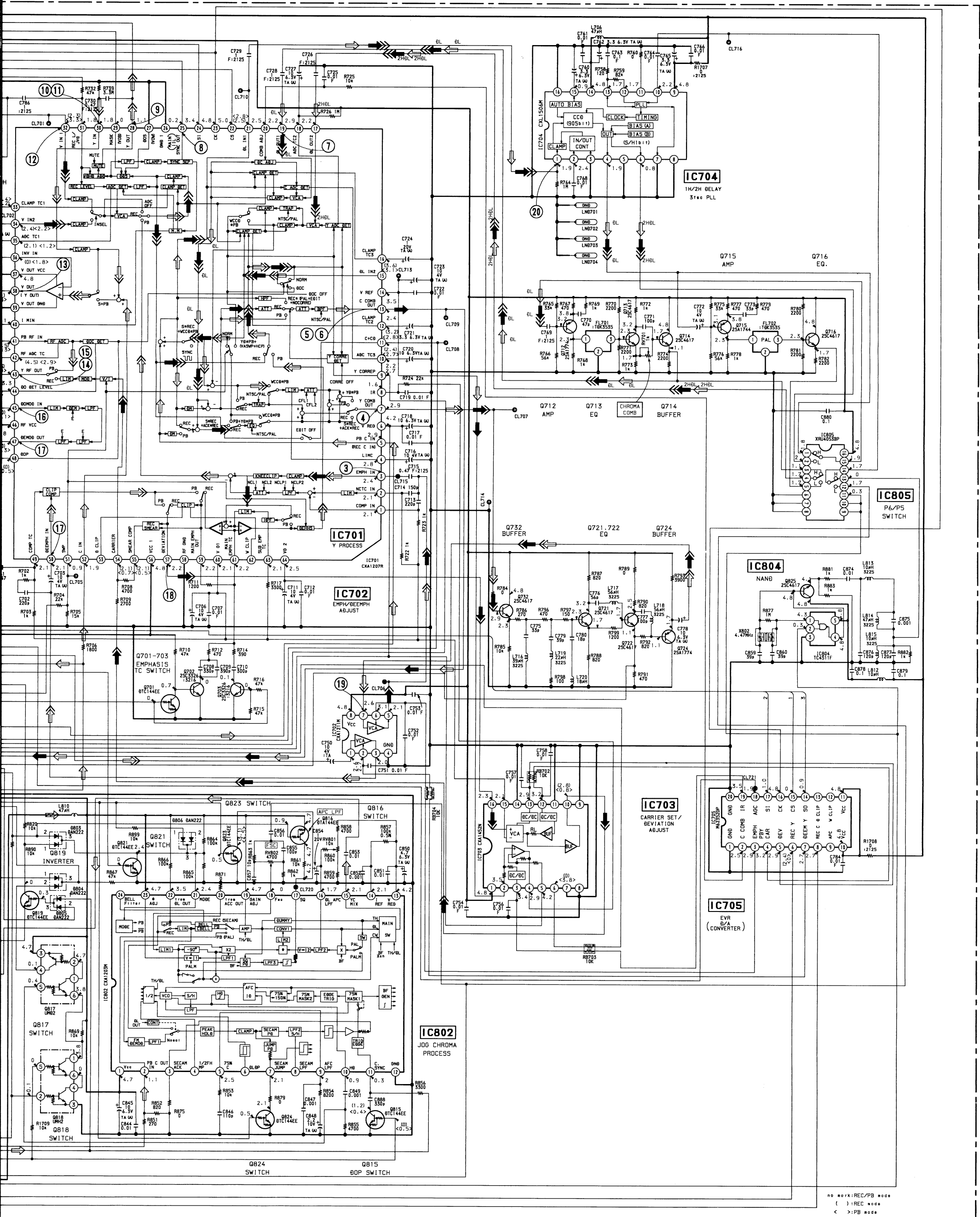
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29

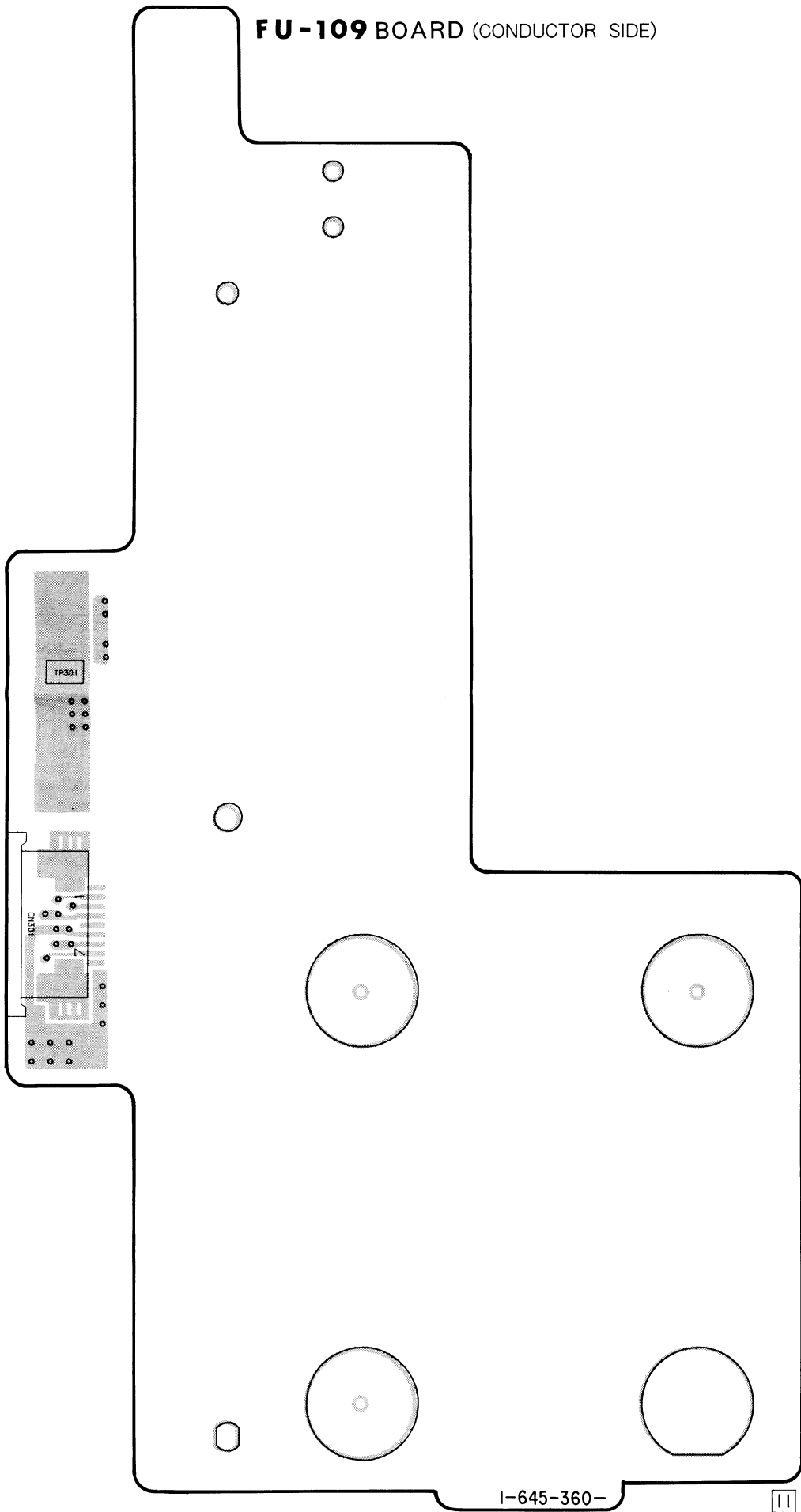
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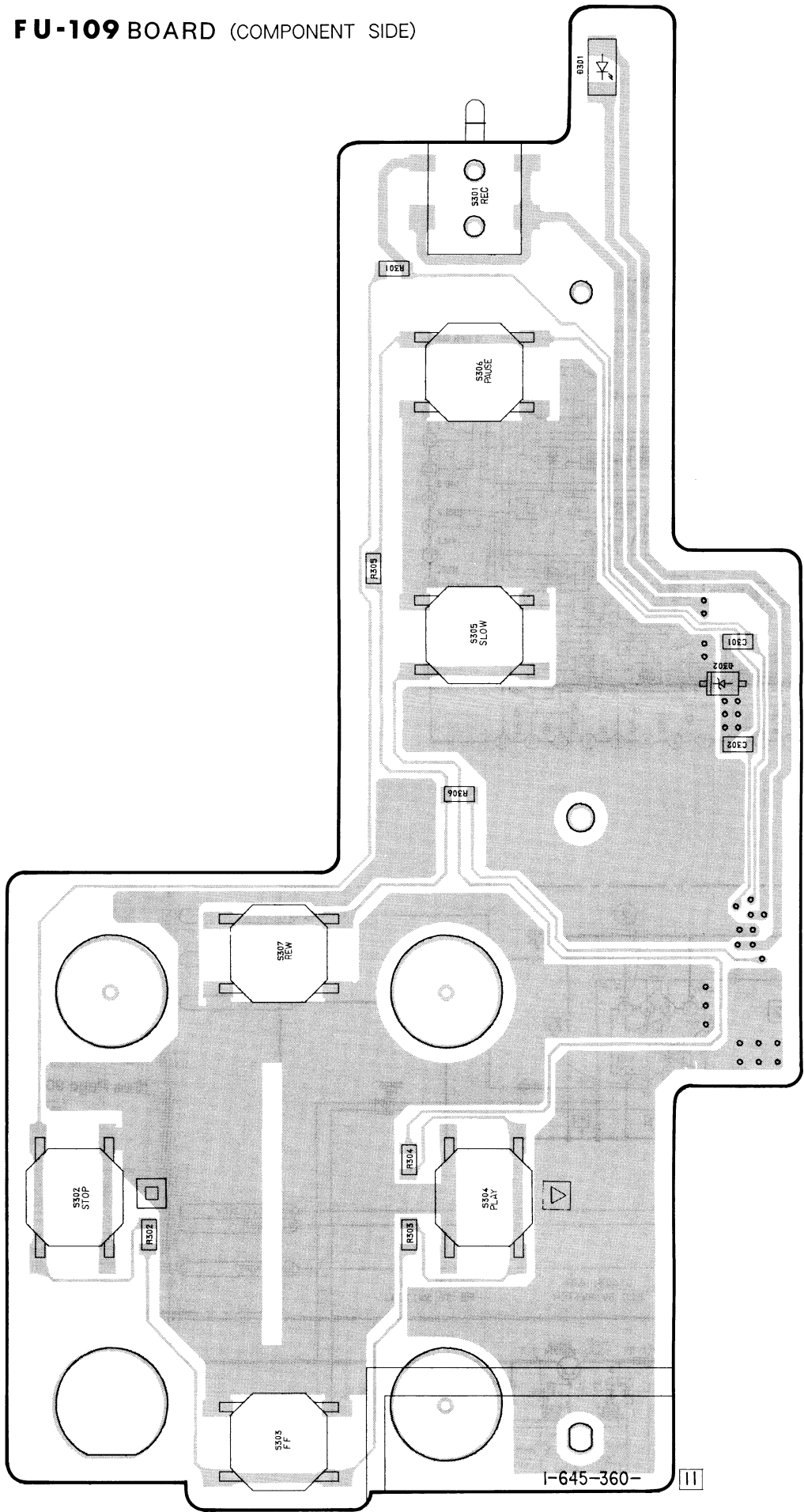
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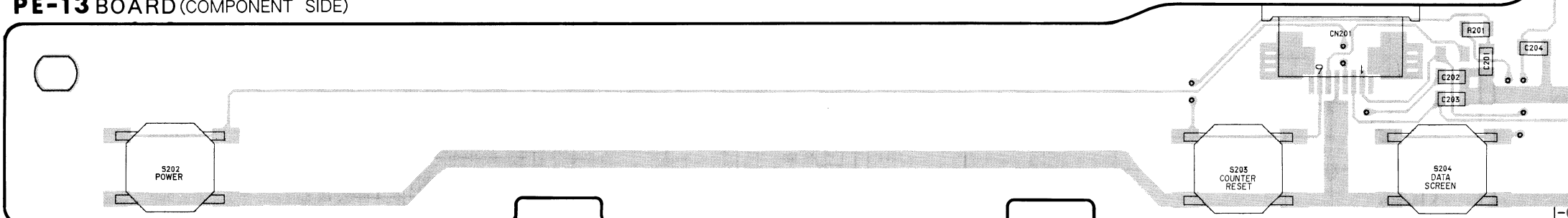
FU-109 BOARD (CONDUCTOR SIDE)



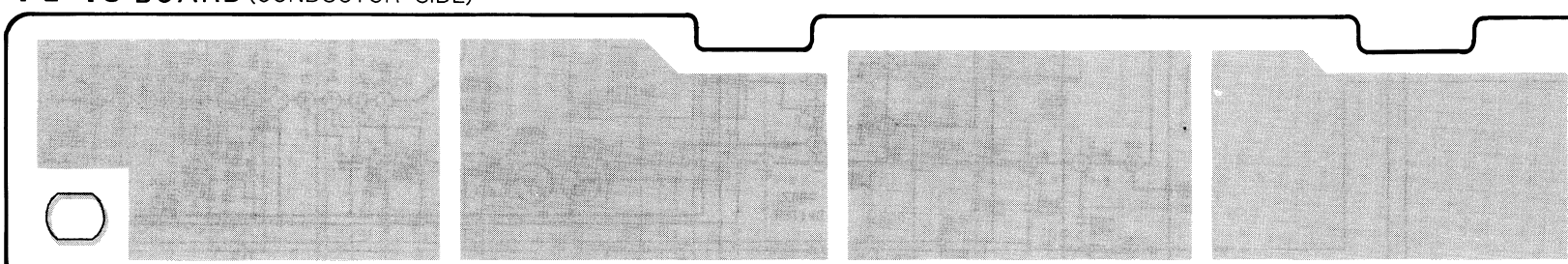
FU-109 BOARD (COMPONENT SIDE)



PE-13 BOARD (COMPONENT SIDE)



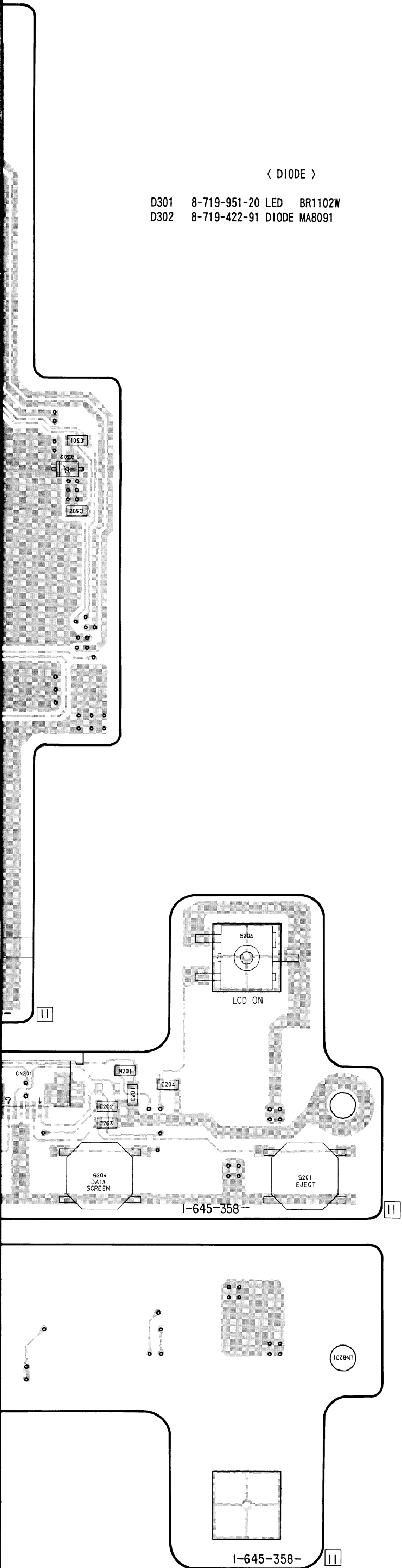
PE-13 BOARD (CONDUCTOR SIDE)



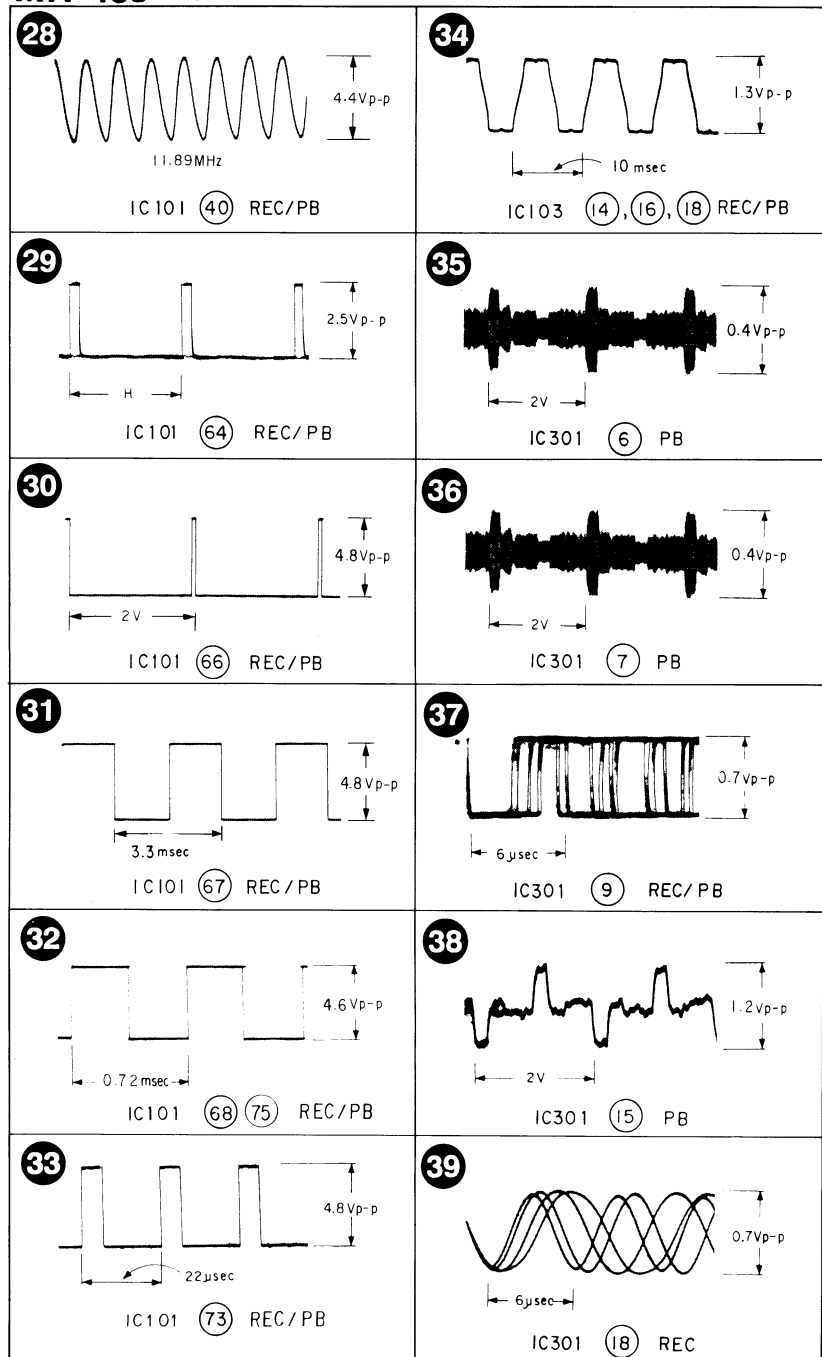
09

< DIODE >

D301 8-719-951-20 LED BR1102W
D302 8-719-422-91 DIODE MA8091



MA-165 BOARD (2/3)

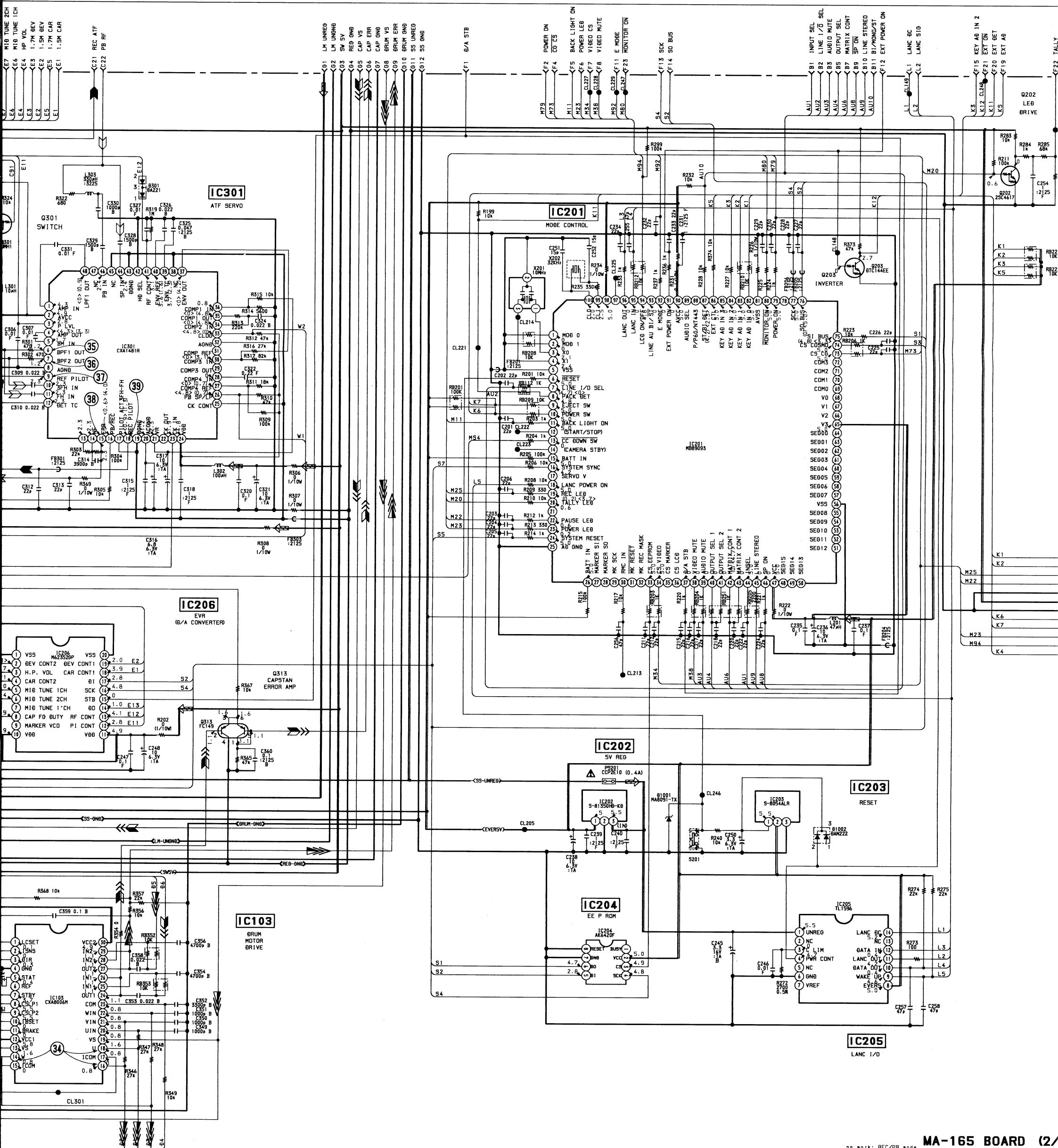




10 11 12 13 14 15 16 17 18 19 20 21

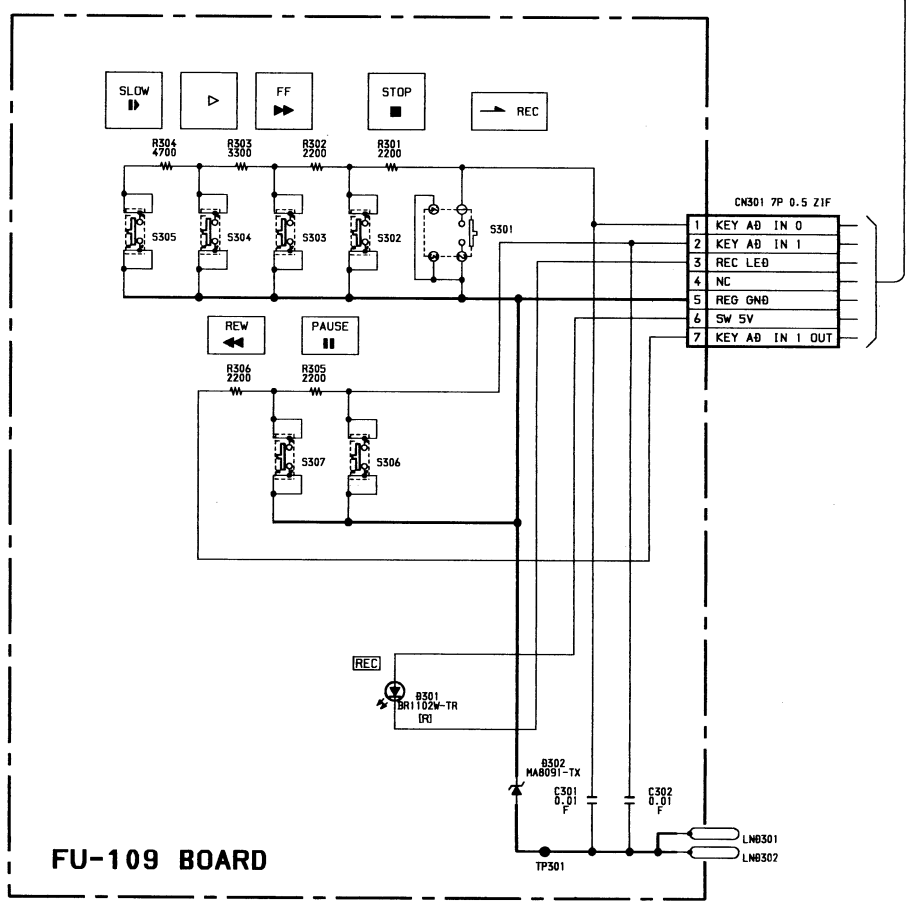
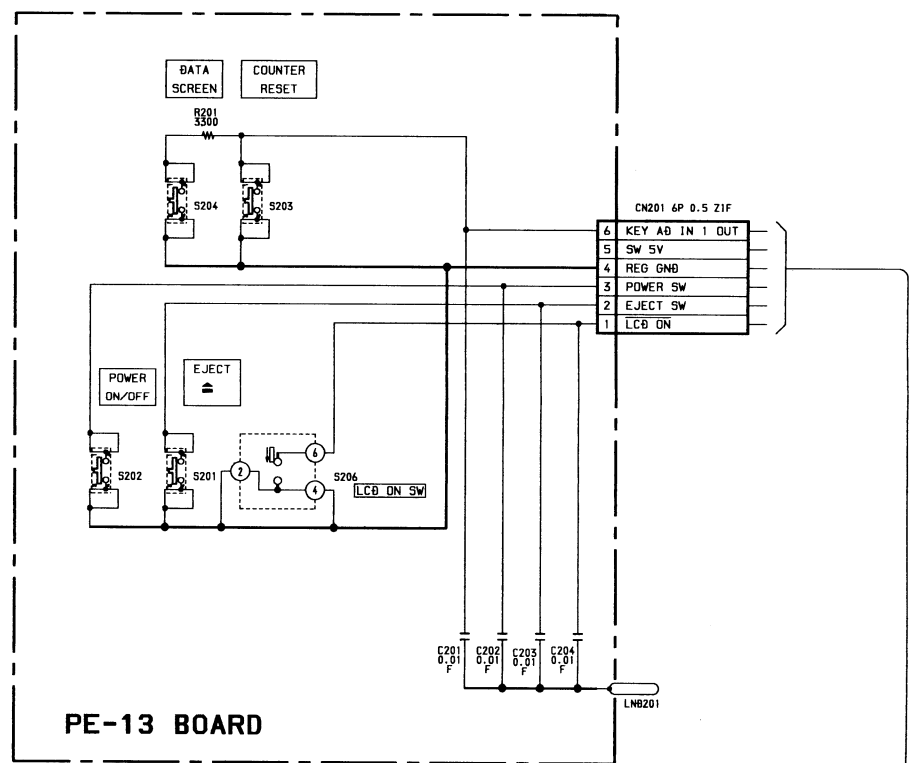
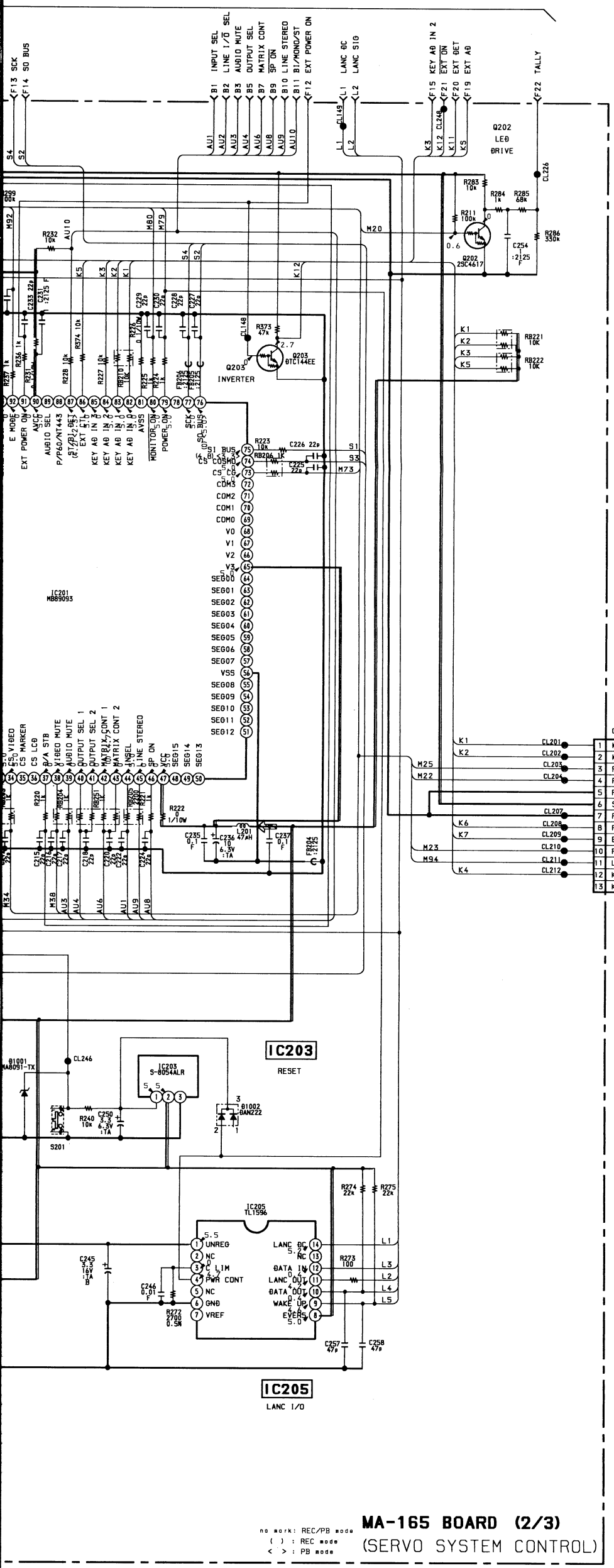
(See Page 90)

TO MA-165 BOARD (3/3)



• SIGNAL PATH

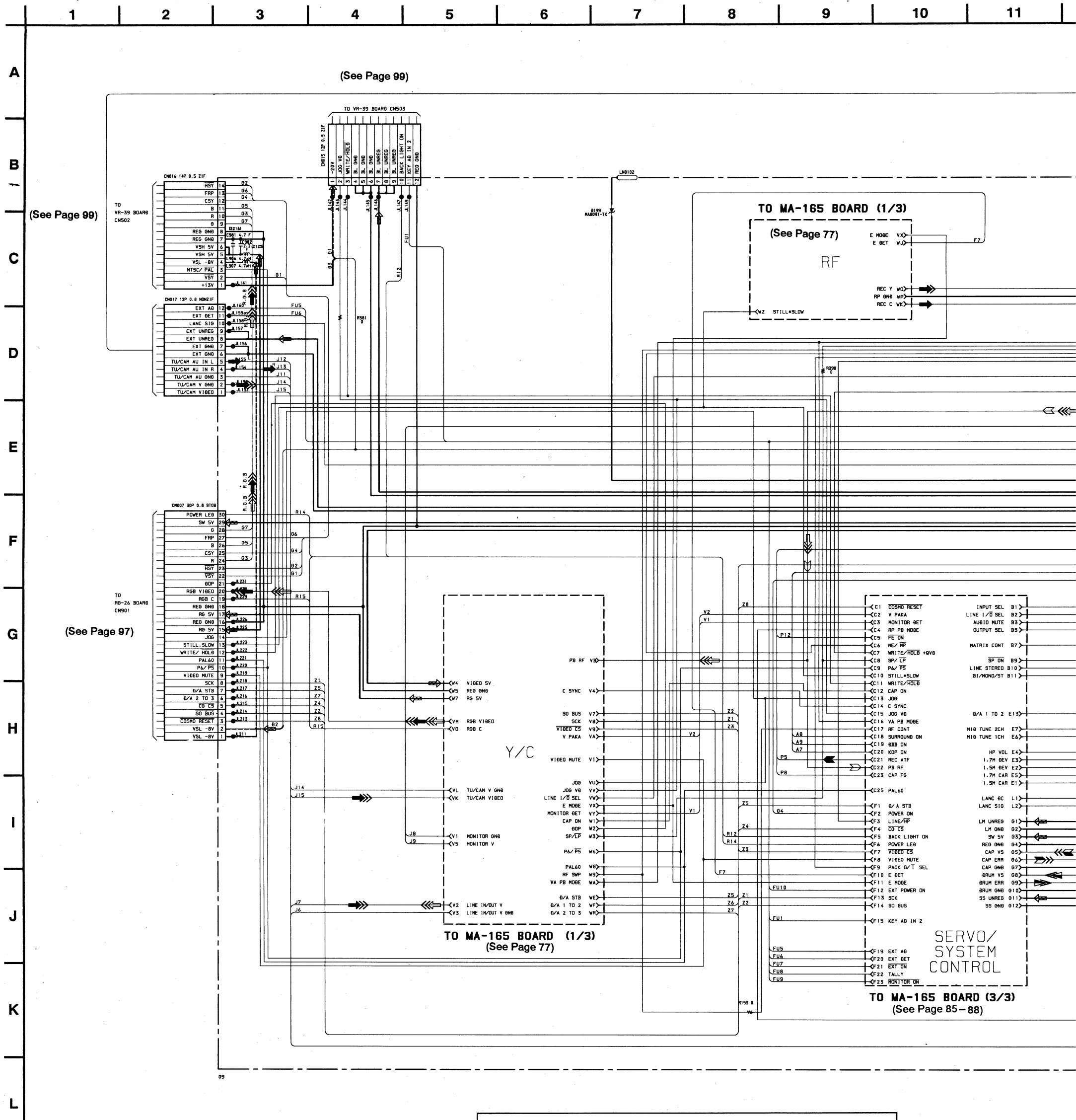
	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶▶	
Drum servo (speed and phase)		▶▶▶	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		▶▶▶▶	
Ref. signal	▶▶▶▶▶	▶▶▶▶▶	▶▶▶▶▶



MA-165 BOARD (2/3)
(SERVO SYSTEM CONTROL)

MA-165 (RELAY/POWER), FP-621 (A/V OUTPUT JACK), HP-84 (HEADPHONE JACK), JK-86 (TUNER INPUT JACK) SCHEMATIC DIAGRAMS

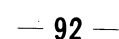
• Refer to page 71 for Printed



	11	12	13	14	15	16	17	18	19	20	21	22
--	----	----	----	----	----	----	----	----	----	----	----	----

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡	➡➡➡➡	➡
PB			➡➡➡➡	➡

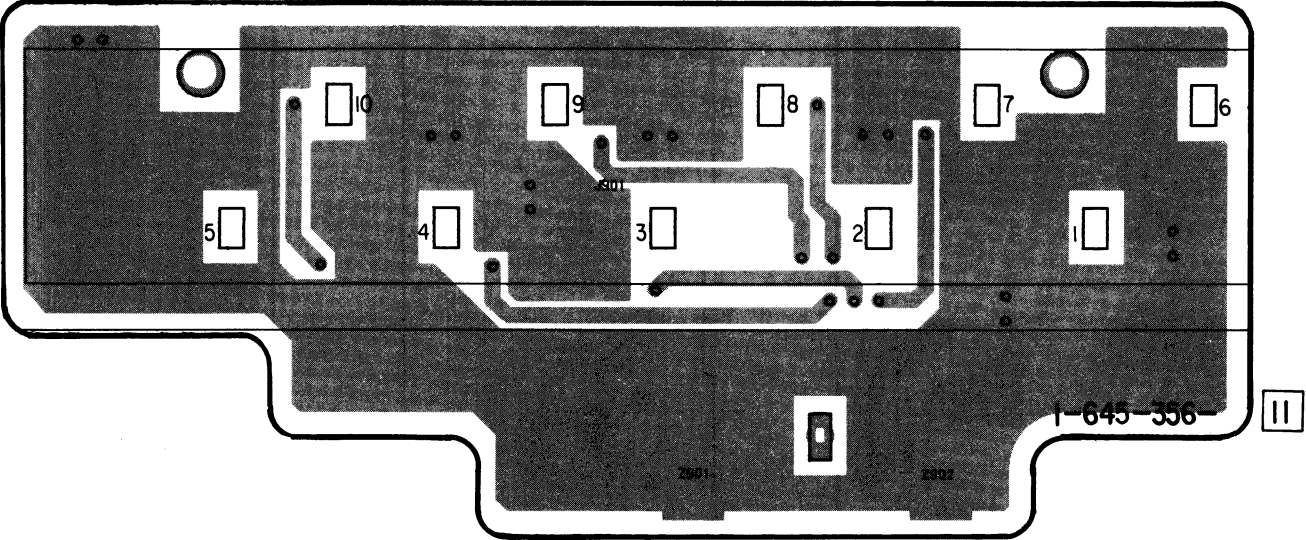
	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)			
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)			
Ref. signal			



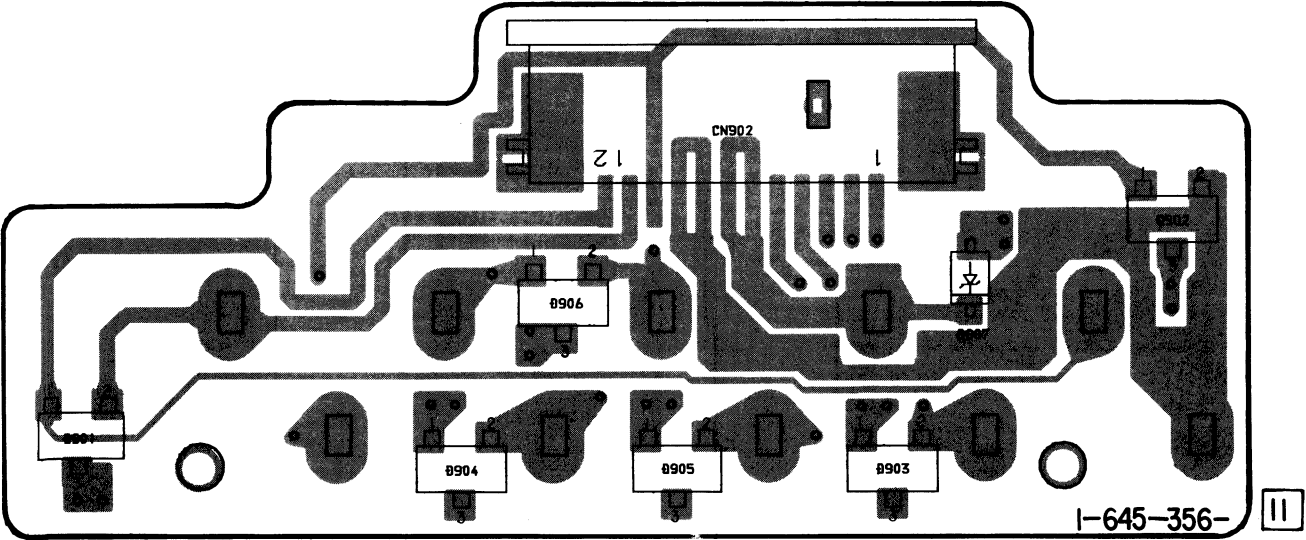
HP-84 (HEADPHONE JACK), JK-86 (TUNER INPUT JACK) PRINTED WIRING BOARDS

- FP-621 board is replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

JK-86 BOARD (COMPONENT SIDE)



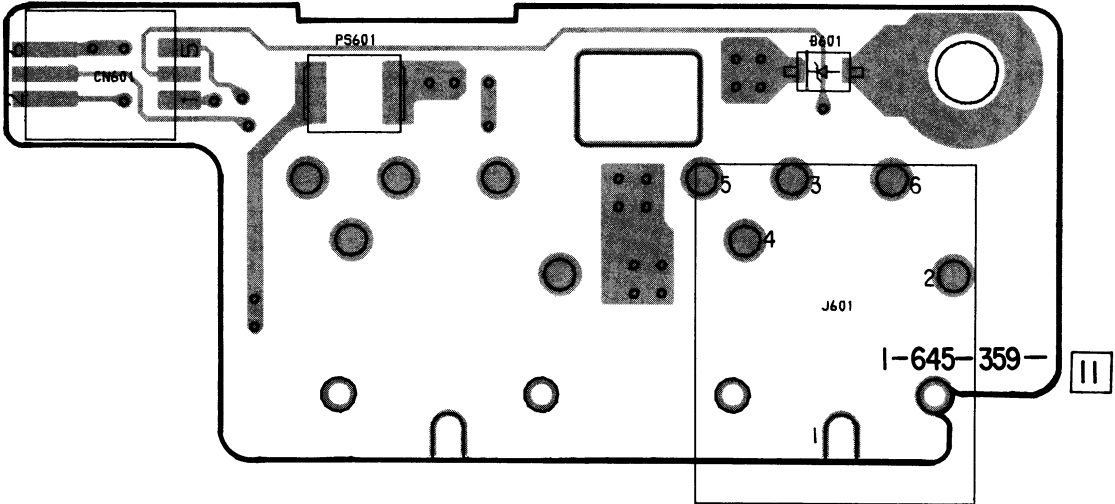
JK-86 BOARD (CONDUCTOR SIDE)



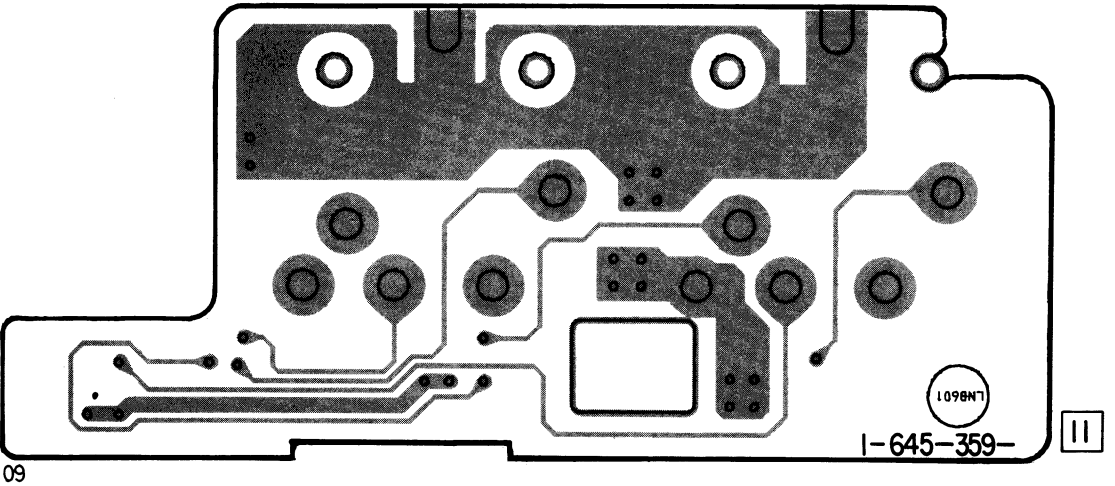
< DIODE >

D901	8-719-420-81	DIODE	MA3075WA
D902	8-719-420-81	DIODE	MA3075WA
D903	8-719-420-81	DIODE	MA3075WA
D904	8-719-420-81	DIODE	MA3075WA
D905	8-719-420-81	DIODE	MA3075WA
D906	8-719-420-81	DIODE	MA3075WA
D907	8-719-420-87	DIODE	MA8130

HP-84 BOARD (COMPONENT SIDE)



HP-84 BOARD (CONDUCTOR SIDE)



< DIODE >

D601 8-719-420-87 DIODE MA8130

- For printed wiring boards.
- ○ : Through hole is omitted.

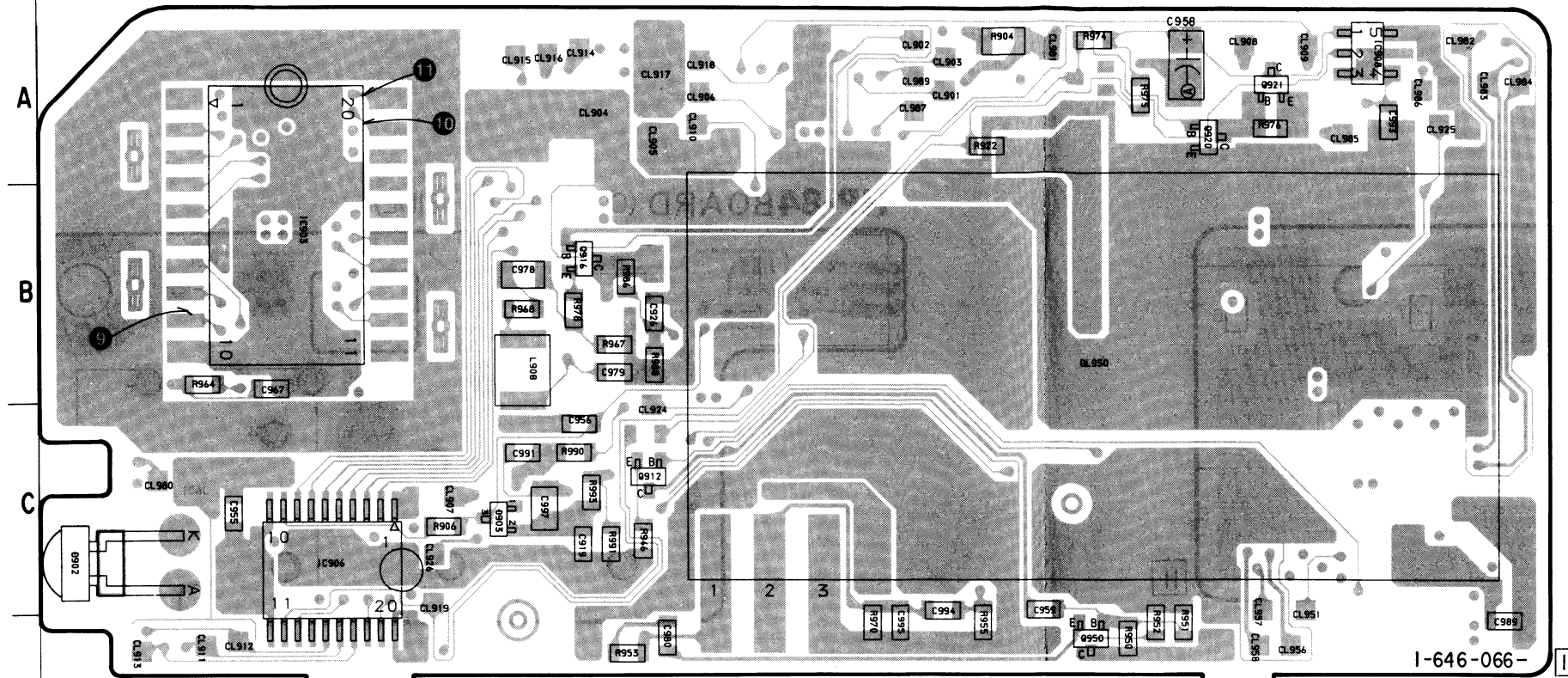
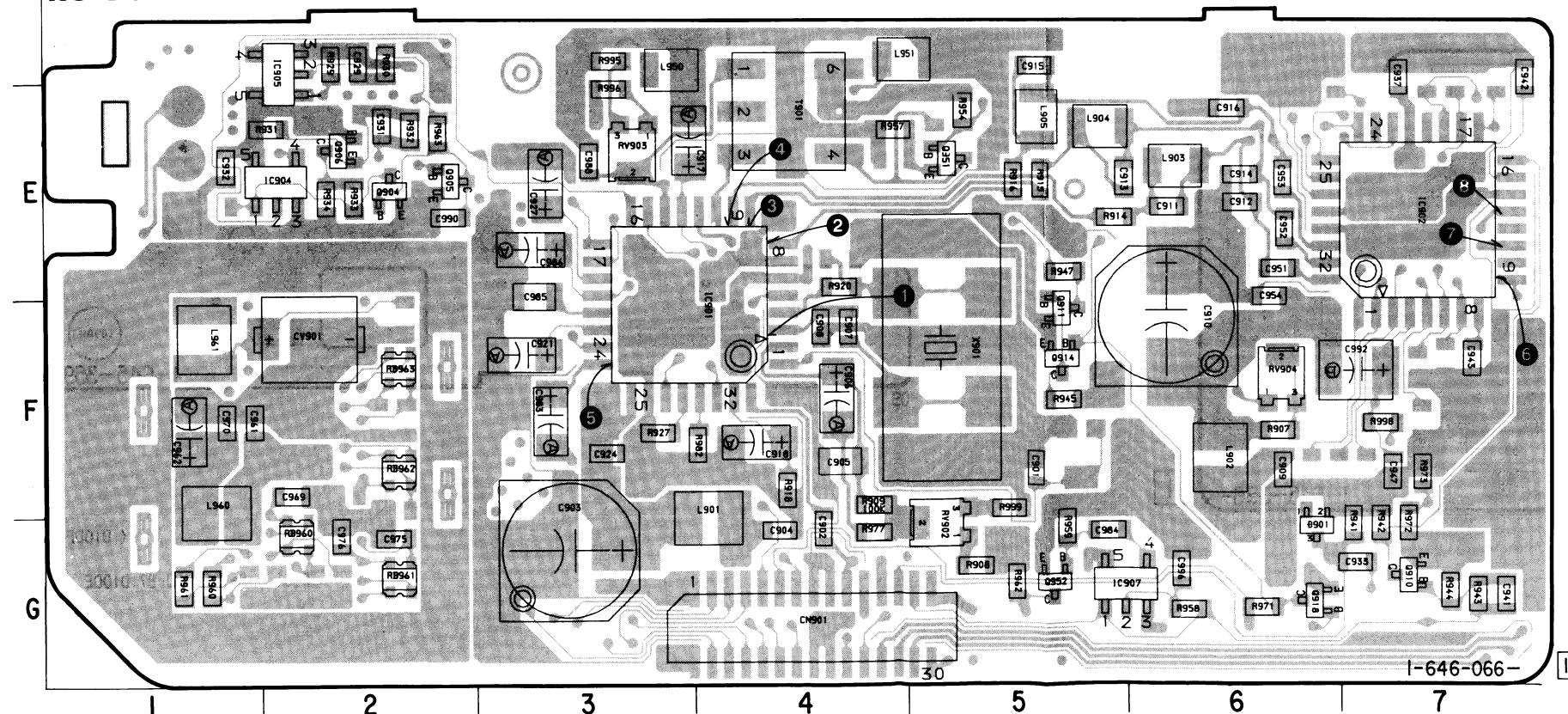
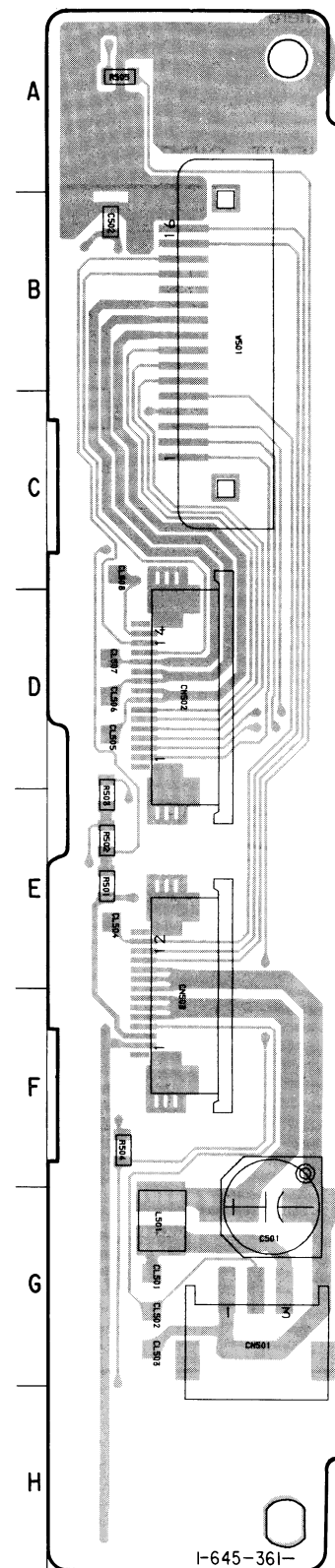
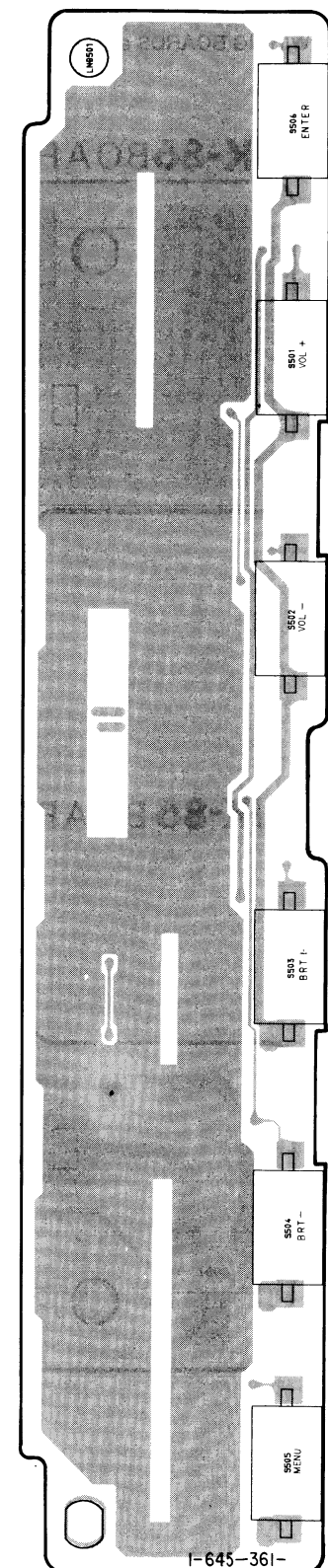
RG-26 BOARD (CONDUCTOR SIDE)

RG-26 BOARD

D901 G-6
D902 C-1
D903 C-3

IC901 F-4
IC902 E-7
IC903 B-2
IC904 E-2
IC905 E-2
IC906 C-2
IC907 G-5
IC908 A-6

Q904 E-2
Q905 E-2
Q906 E-2
Q910 G-7
Q911 F-5
Q912 C-3
Q914 F-5
Q916 B-3
Q918 G-6
Q920 A-6
Q921 A-6
Q950 D-6
Q951 E-5
Q952 G-5

**RG-26 BOARD (COMPONENT SIDE)****VR-39 BOARD (COMPONENT SIDE)****VR-39 BOARD (CONDUCTOR SIDE)**

< DIODE >

D901 8-719-989-03 DIODE DAN222
D902 8-719-938-67 LED GL-3EG8
D903 8-719-989-03 DIODE DAN222
D904 8-719-991-00 DIODE DAP222

< IC >

IC901 8-752-058-96 IC CXA1585Q
IC902 8-752-057-28 IC CXA1485Q
IC903 8-759-084-06 IC uPD6453GT-622-E2
IC904 8-759-234-13 IC TC4530F
IC905 8-759-209-69 IC TC4511F

< TRANSISTOR >

IC906 8-759-635-27 IC M62352GP
IC907 8-759-234-13 IC TC4530F
IC908 8-759-209-97 IC TC4581F

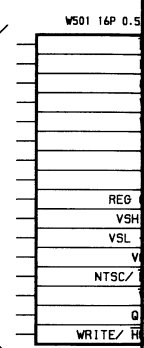
Q904 8-729-928-81 TRANSISTOR DTC144EE
Q905 8-729-928-81 TRANSISTOR DTC144EE
Q906 8-729-928-19 TRANSISTOR 2SA1774R
Q910 8-729-928-19 TRANSISTOR 2SA1774R
Q911 8-729-928-81 TRANSISTOR DTC144EE

Q912 8-729-928-27 TRANSISTOR DTA144EE
Q914 8-729-928-94 TRANSISTOR DTC144WE
Q916 8-729-927-XX TRANSISTOR 2SC4617R
Q918 8-729-928-27 TRANSISTOR DTA144EE
Q920 8-729-928-81 TRANSISTOR DTC144EE

DTA144EE
DTC144WE
2SC4617R
DTA144EE
DTC144EE

Q921 8-729-928-27 TRANSISTOR DTA144EE
Q950 8-729-927-XX TRANSISTOR 2SC4617R
Q951 8-729-927-XX TRANSISTOR 2SC4617R
Q952 8-729-927-XX TRANSISTOR 2SC4617R

J



• SIGNAL PATH	
	CHROMA
REC	➡
PB	➡

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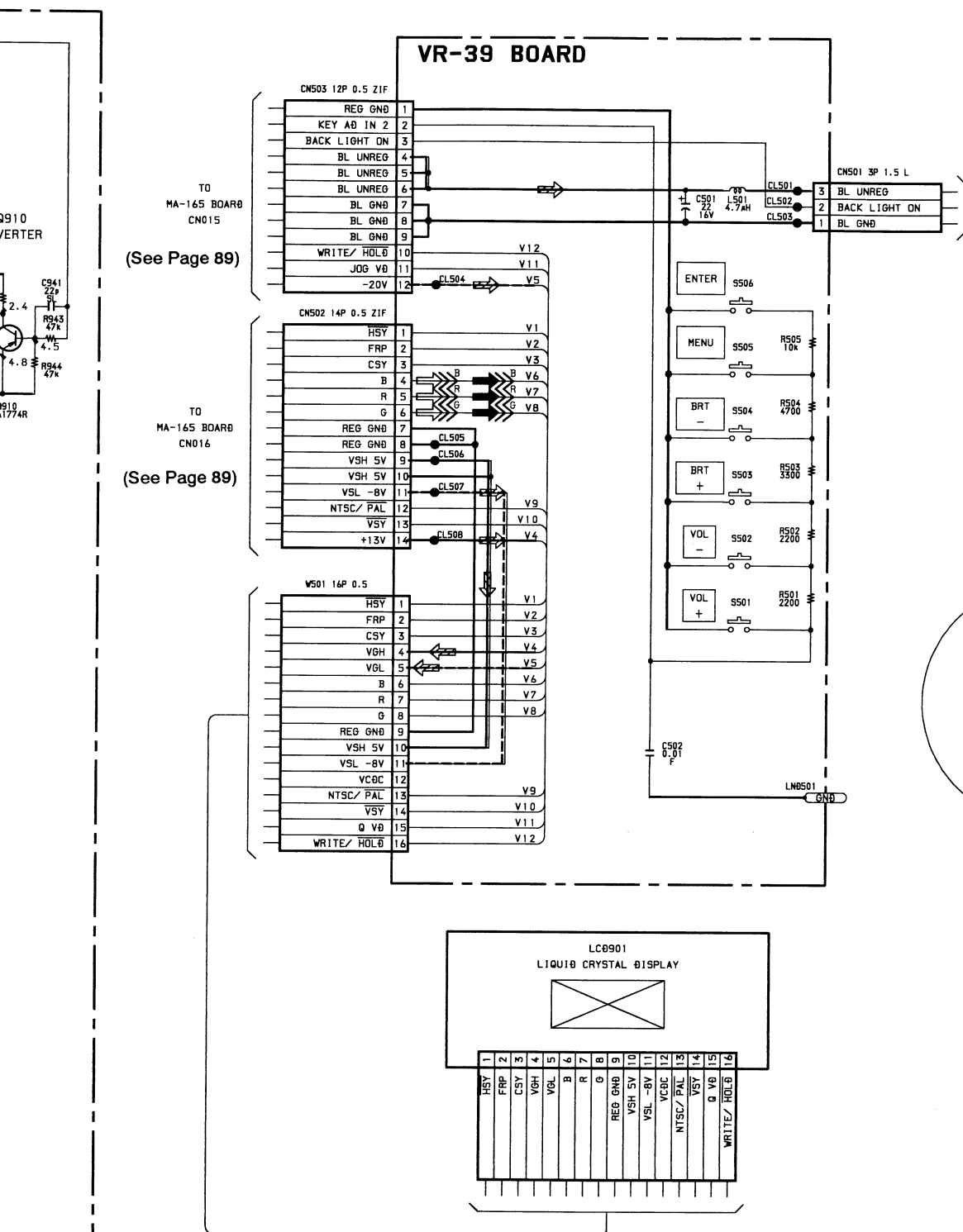
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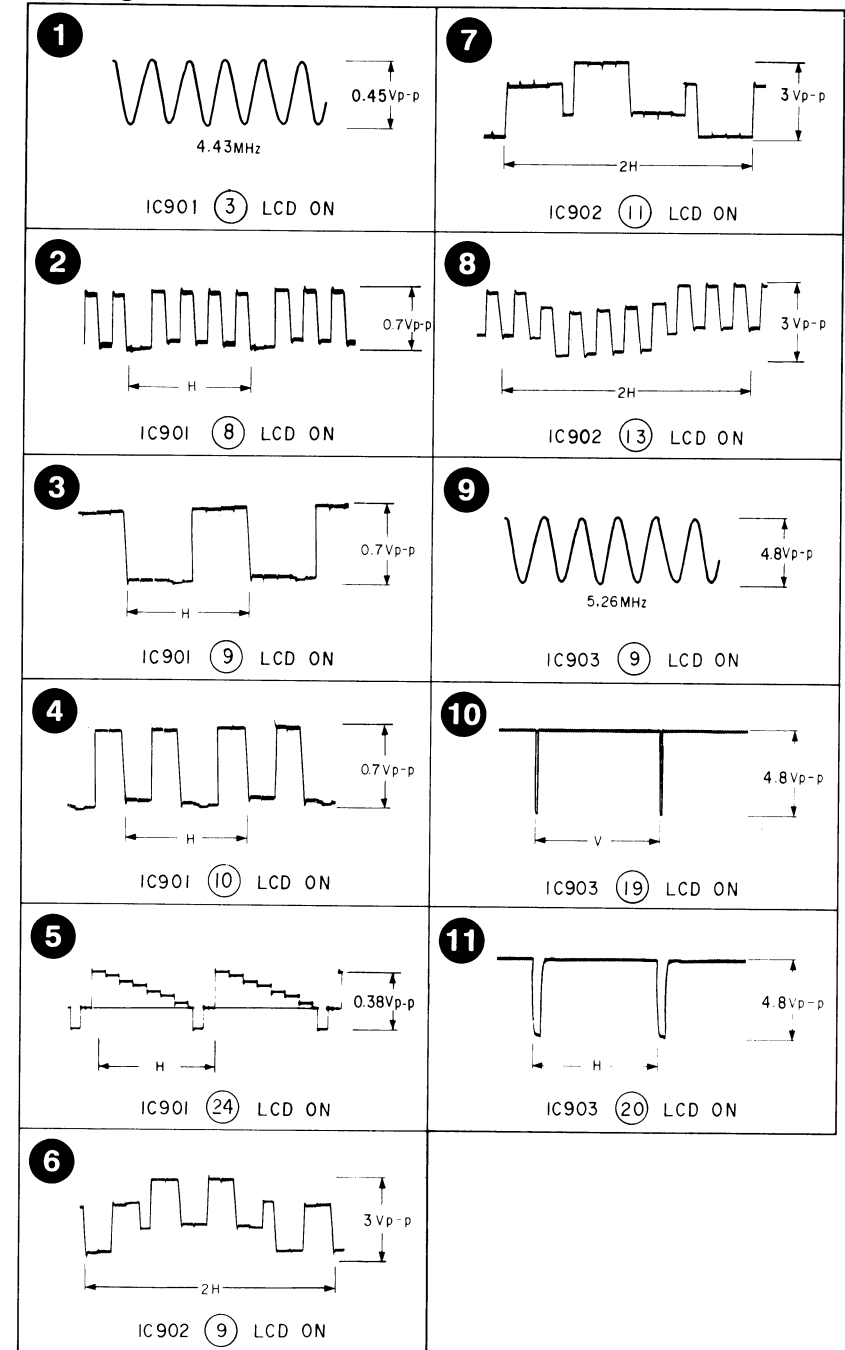
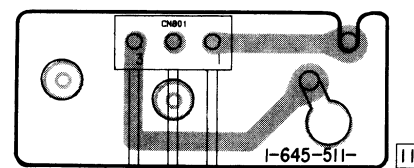
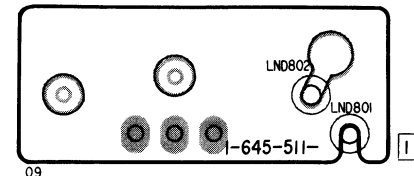
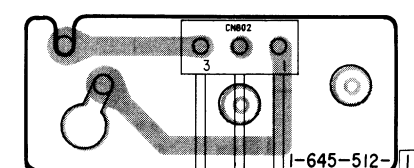
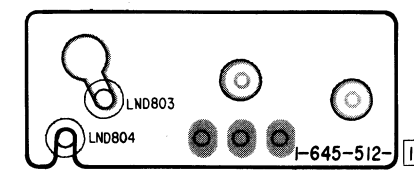
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• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	→	⇒	⇒⇒	
PB	⇒	⇒⇒	⇒⇒⇒	

RG-26 BOARD**LA-22 BOARD**
(COMPONENT SIDE)**LA-22 BOARD**
(CONDUCTOR SIDE)**LA-23 BOARD**
(COMPONENT SIDE)**LA-23 BOARD**
(CONDUCTOR SIDE)

AU-147 (AUDIO) PRINTED WIRING BOARD

< DIODE >

D054	8-719-989-03	DIODE	DAN222
D055	8-719-989-03	DIODE	DAN222
D401	8-719-989-03	DIODE	DAN222
D402	8-719-989-00	DIODE	DA221
D403	8-719-420-81	DIODE	MA3075WA
D404	8-719-420-81	DIODE	MA3075WA
D405	8-719-420-81	DIODE	MA3075WA

< IC >

IC041	8-759-510-56	IC	BA3570FS
IC042	8-759-701-02	IC	NJM2073M
IC043	8-759-234-77	IC	TC4S66F
IC401	8-759-077-12	IC	CXA1542R
IC403	8-752-053-21	IC	CXA1211M
IC404	8-759-008-67	IC	MC14066BF
IC406	8-759-008-67	IC	MC14066BF

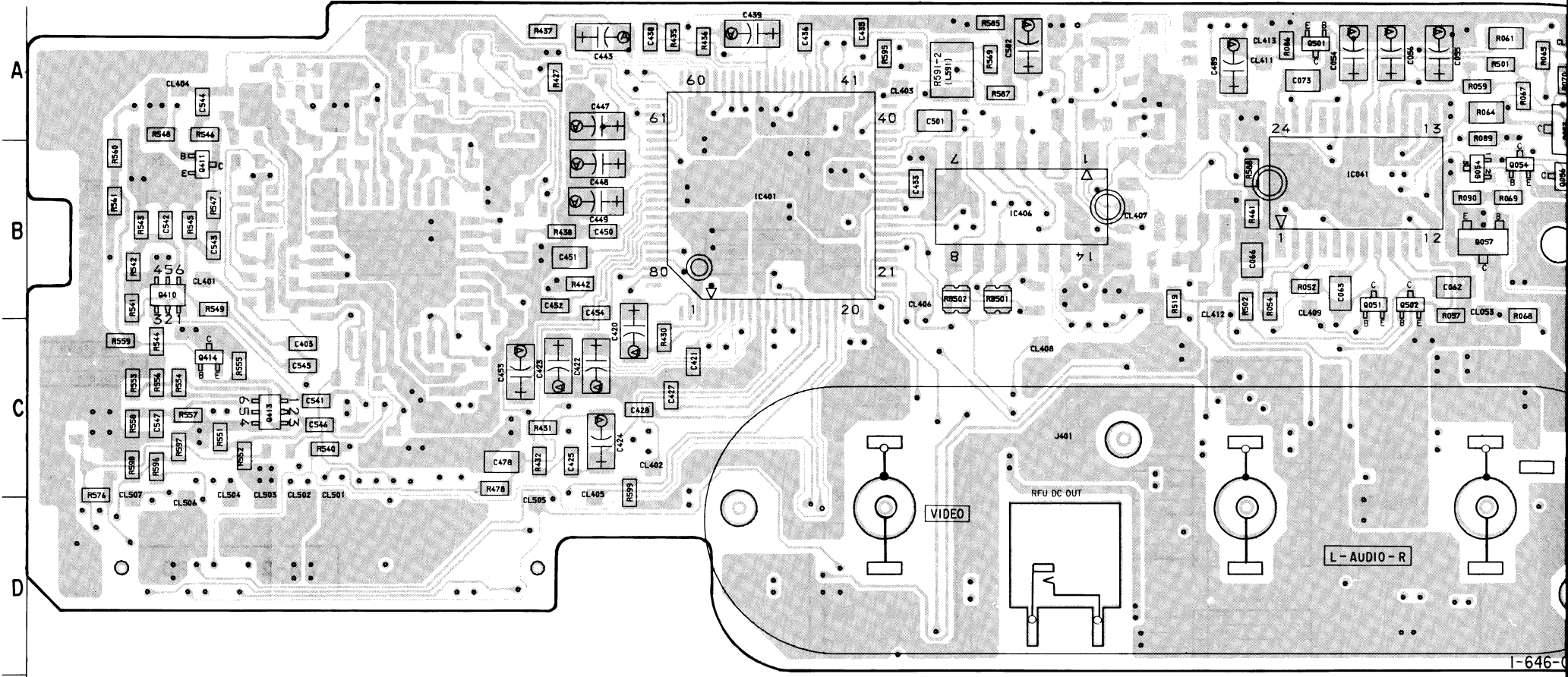
< TRANSISTOR >

Q051	8-729-928-81	TRANSISTOR	DTC144EE
Q052	8-729-202-38	TRANSISTOR	2SC3326N-A
Q053	8-729-202-38	TRANSISTOR	2SC3326N-A
Q054	8-729-927-XX	TRANSISTOR	2SC4617R
Q055	8-729-927-62	TRANSISTOR	UMX1
Q056	8-729-928-90	TRANSISTOR	DTC114EE
Q057	8-729-141-48	TRANSISTOR	2SB624-BV345
Q404	8-729-927-XX	TRANSISTOR	2SC4617R
Q405	8-729-927-XX	TRANSISTOR	2SC4617R
Q406	8-729-930-13	TRANSISTOR	UMH2
Q408	8-729-927-XX	TRANSISTOR	2SC4617R
Q409	8-729-927-XX	TRANSISTOR	2SC4617R
Q410	8-729-927-62	TRANSISTOR	UMX1
Q411	8-729-927-XX	TRANSISTOR	2SC4617R
Q412	8-729-928-81	TRANSISTOR	DTC144EE
Q413	8-729-927-62	TRANSISTOR	UMX1
Q414	8-729-927-XX	TRANSISTOR	2SC4617R
Q415	8-729-928-19	TRANSISTOR	2SA1774R
Q416	8-729-928-81	TRANSISTOR	DTC144EE
Q417	8-729-928-19	TRANSISTOR	2SA1774R
Q418	8-729-927-XX	TRANSISTOR	2SC4617R
Q419	8-729-141-48	TRANSISTOR	2SB624-BV345
Q428	8-729-928-81	TRANSISTOR	DTC144EE
Q501	8-729-927-XX	TRANSISTOR	2SC4617R
Q502	8-729-927-XX	TRANSISTOR	2SC4617R
Q591	8-729-929-26	TRANSISTOR	DTC114TE
Q592	8-729-929-26	TRANSISTOR	DTC114TE
Q593	8-729-928-81	TRANSISTOR	DTC144EE

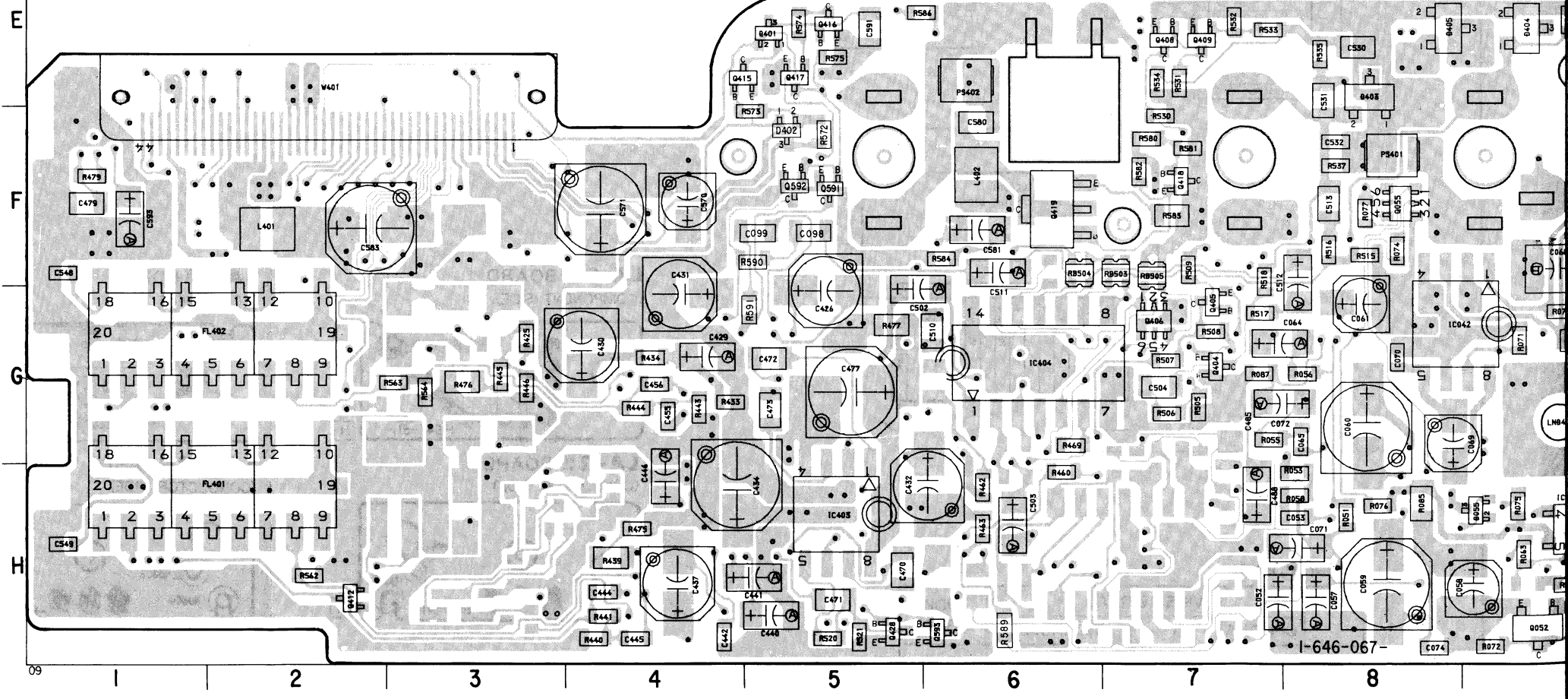
AU-147 BOARD

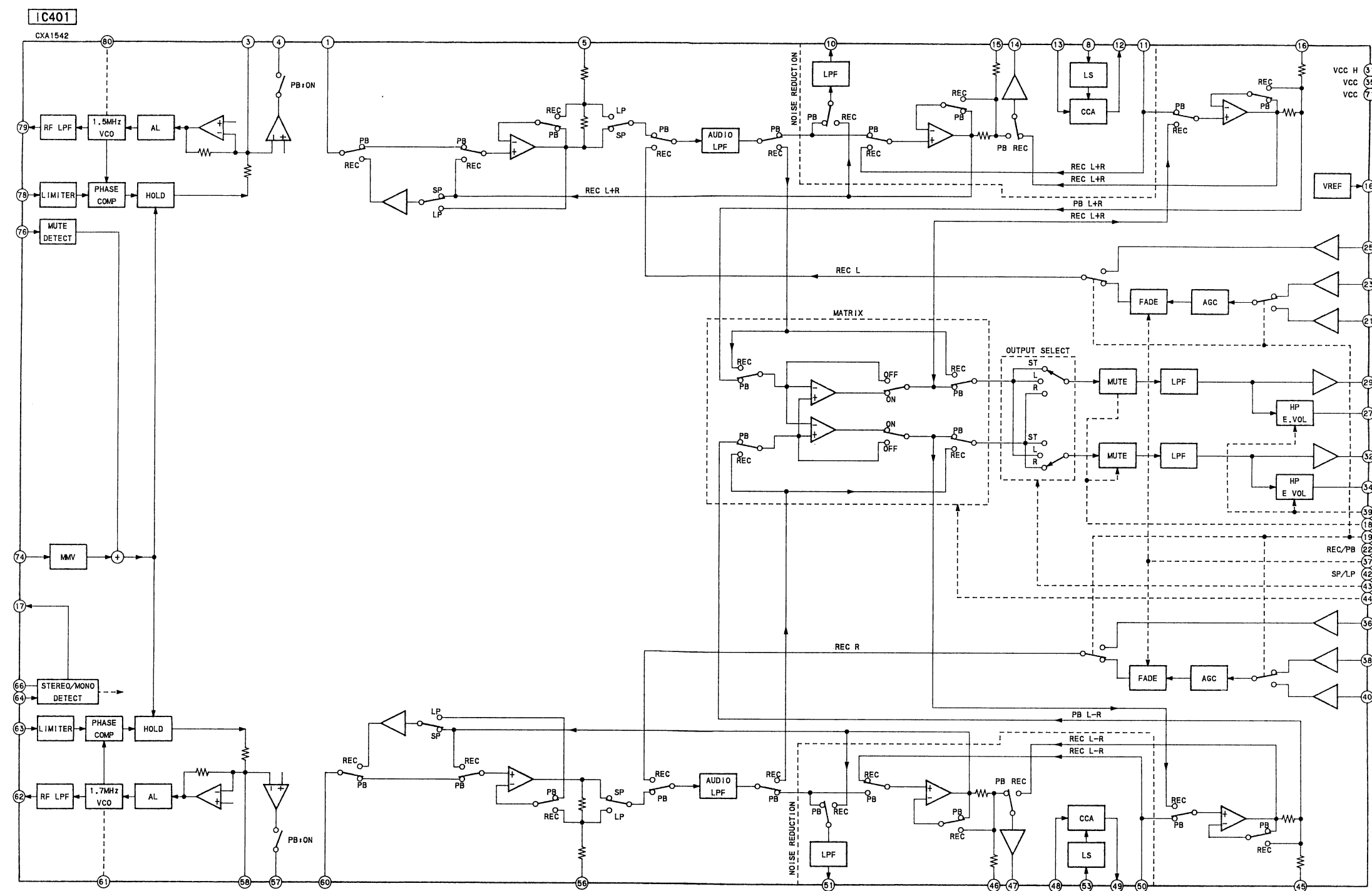
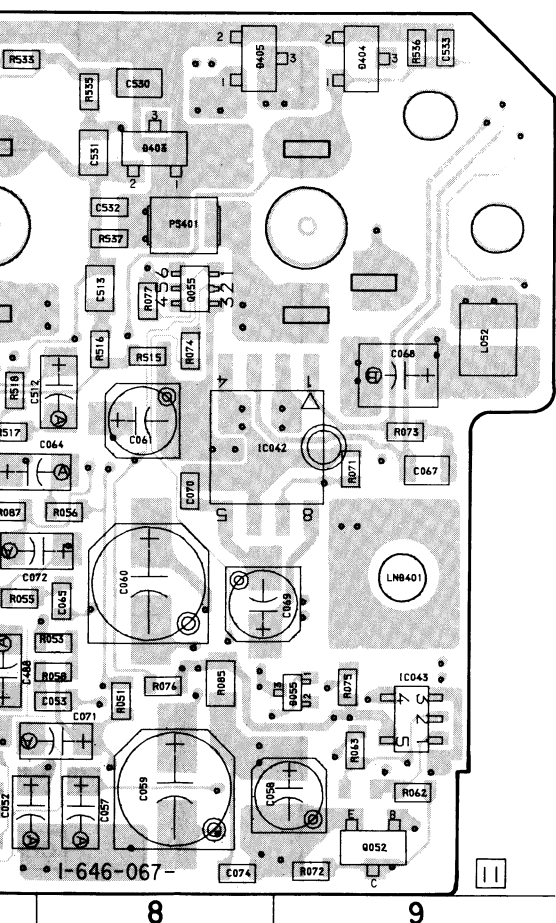
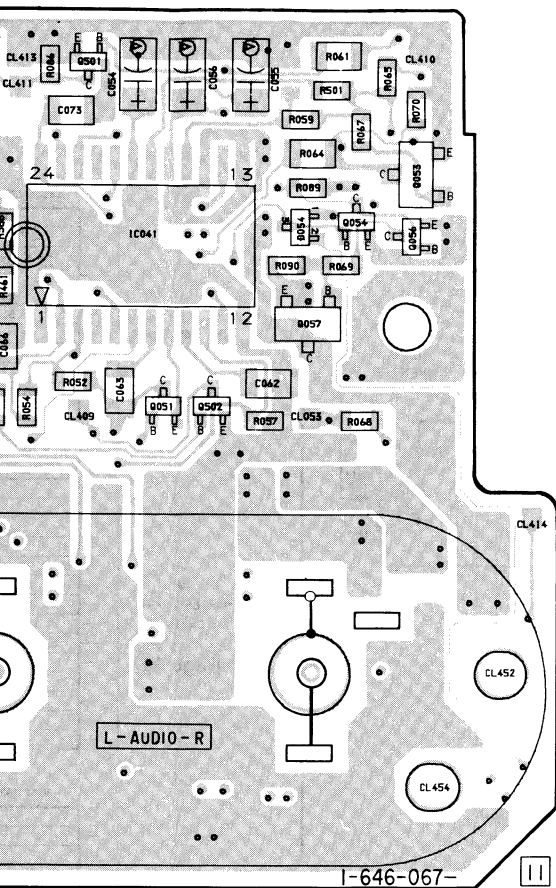
D054	B-9
D055	H-9
D401	F-10
D402	F-10
D403	F-10
D404	F-9
D405	F-9
IC041	B-8
IC042	C-9
IC043	H-9
IC401	B-5
IC403	H-5
IC404	C-6
IC406	B-6
Q051	B-8
Q052	H-9
Q053	A-9
Q054	B-9
Q055	F-8
Q056	B-9
Q057	B-9
Q404	G-7
Q405	G-7
Q406	G-7
Q408	F-7
Q409	F-7
Q410	B-1
Q411	B-1
Q412	H-2
Q413	C-2
Q414	C-1
Q415	E-5
Q416	E-5
Q417	E-5
Q418	F-7
Q419	F-6
Q428	H-5
Q501	A-8
Q502	B-8
Q591	F-5
Q592	F-5
Q593	H-6

AU-147 BOARD (CONDUCTOR SIDE)

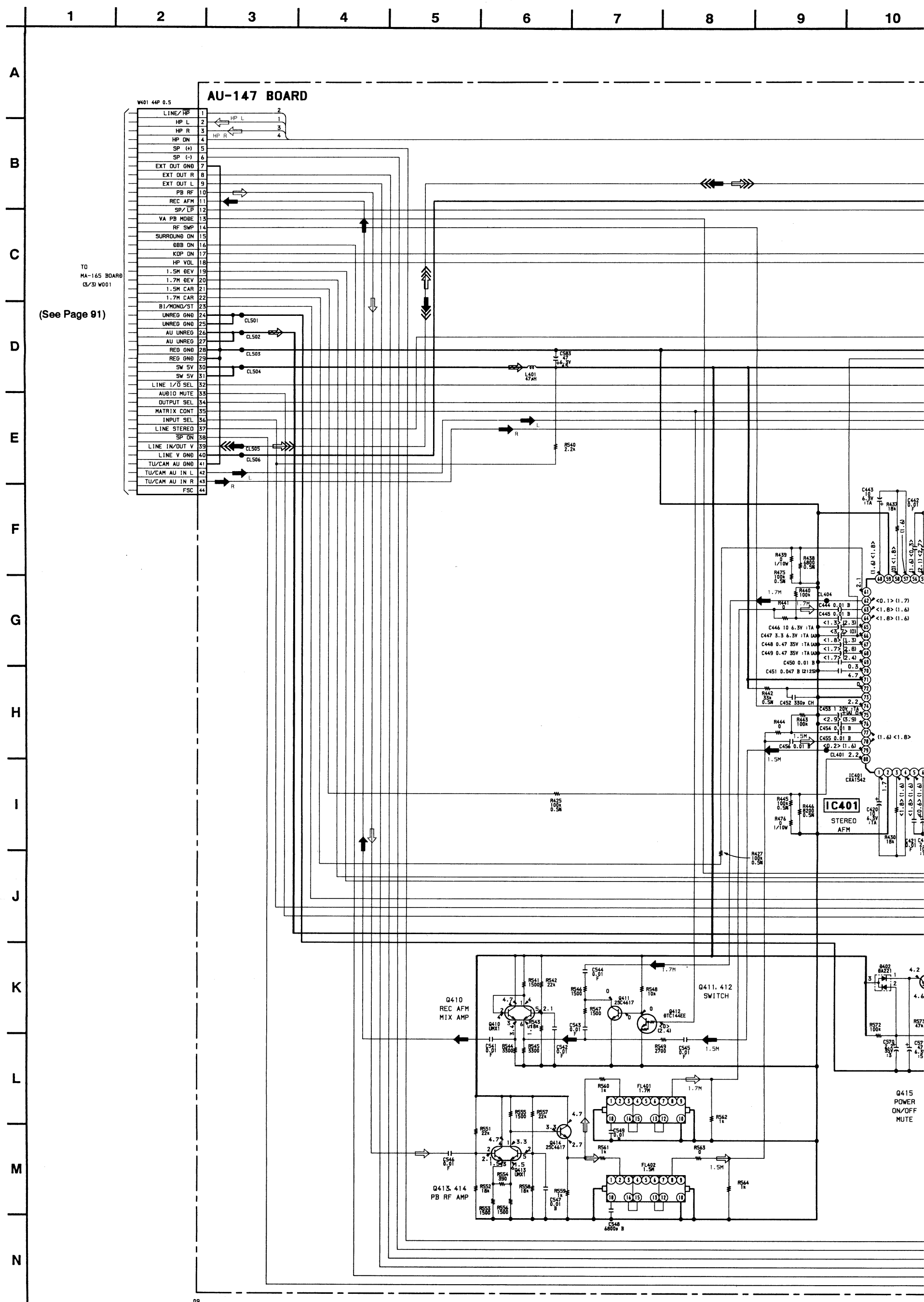


AU-147 BOARD (COMPONENT SIDE)

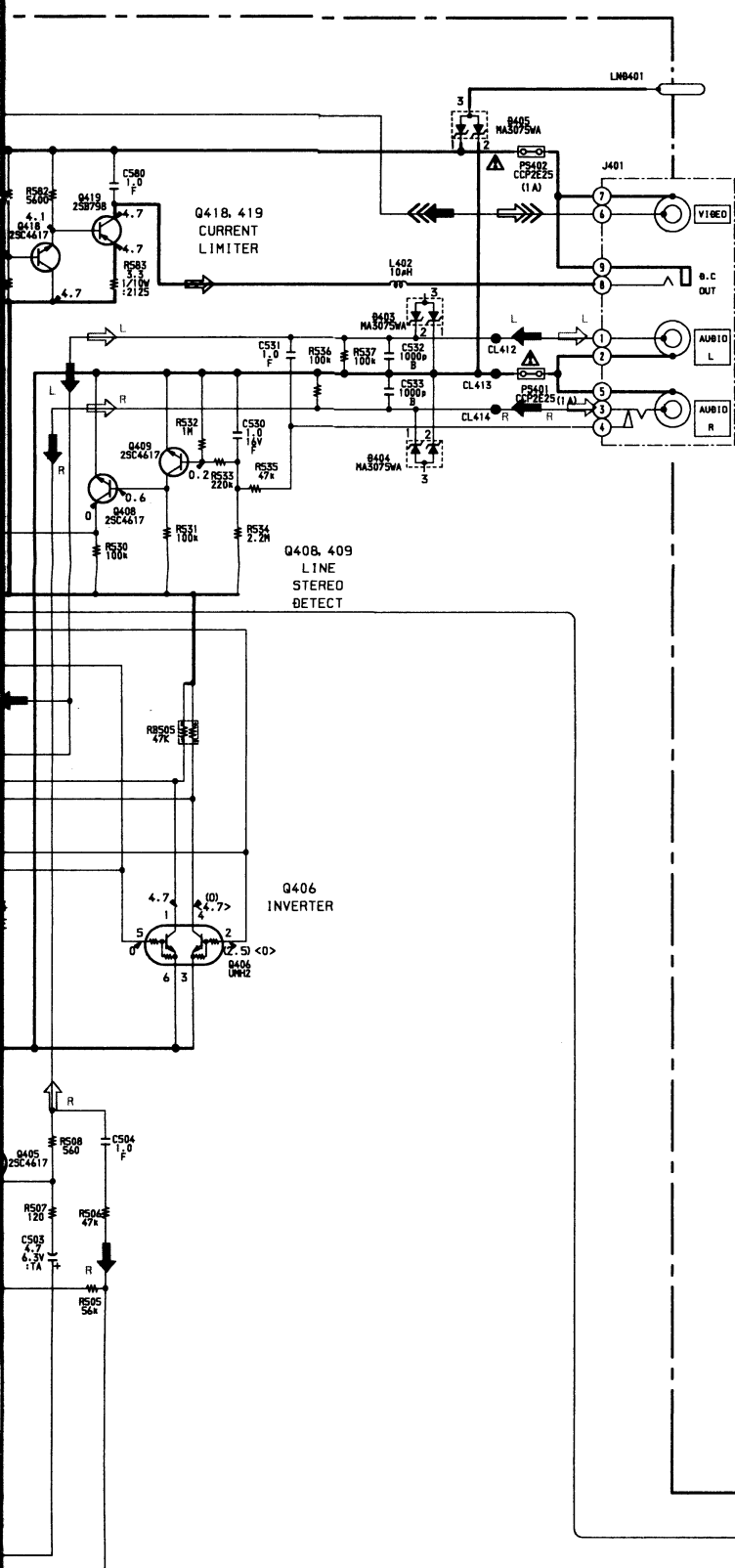




AU-147 (AUDIO) SCHEMATIC DIAGRAM

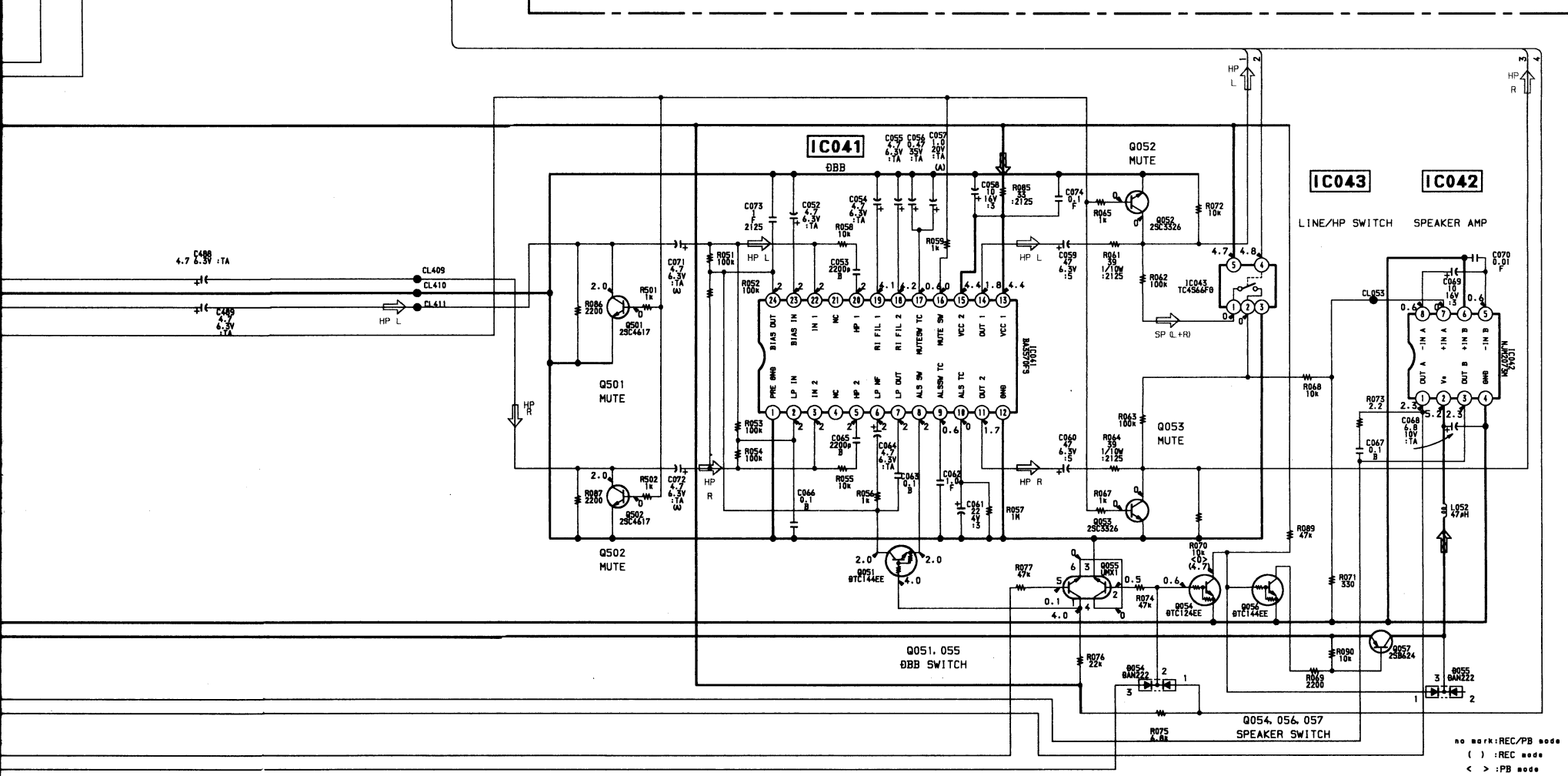






- **SIGNAL PATH**

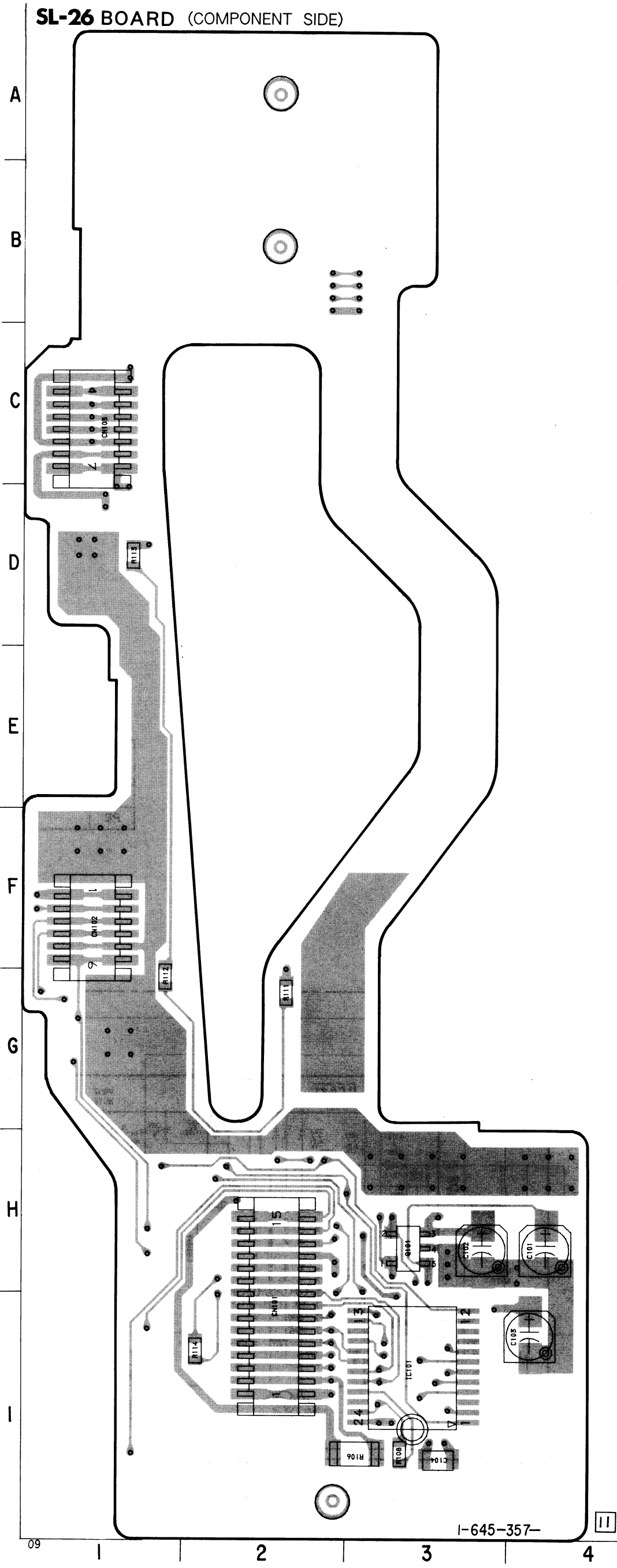
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB				



SL-26 (FG/PG WAVEFORM SHAPING), FP-442 (MODE SWITCH), LM-40 (LOADING MOTOR), LS-33 (MECH SENSOR) PRINTED WIRING BOARDS

- FP-442, LM-40, LS-33 boards are replaced as blocks, so that there PRINTED WIRING BOARDS are omitted.

SL-26 BOARD			
IC101	I-3		
Q101	H-3		
< IC >			
IC101	8-759-059-09 IC	LB8111V	
< TRANSISTOR >			
Q101	8-729-902-93 TRANSISTOR	FMG4	



11

1 2 3 4 5 6 7

A

B

C

D

E

F

G

H

I

J

SL-26 BOARD

no mark: REC/PB mode
*: Can not be measured.

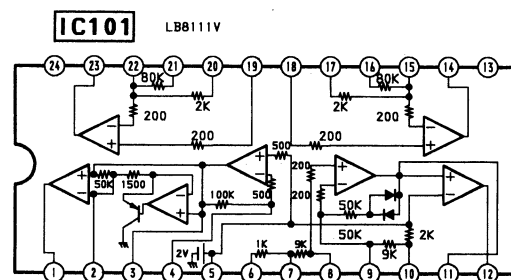
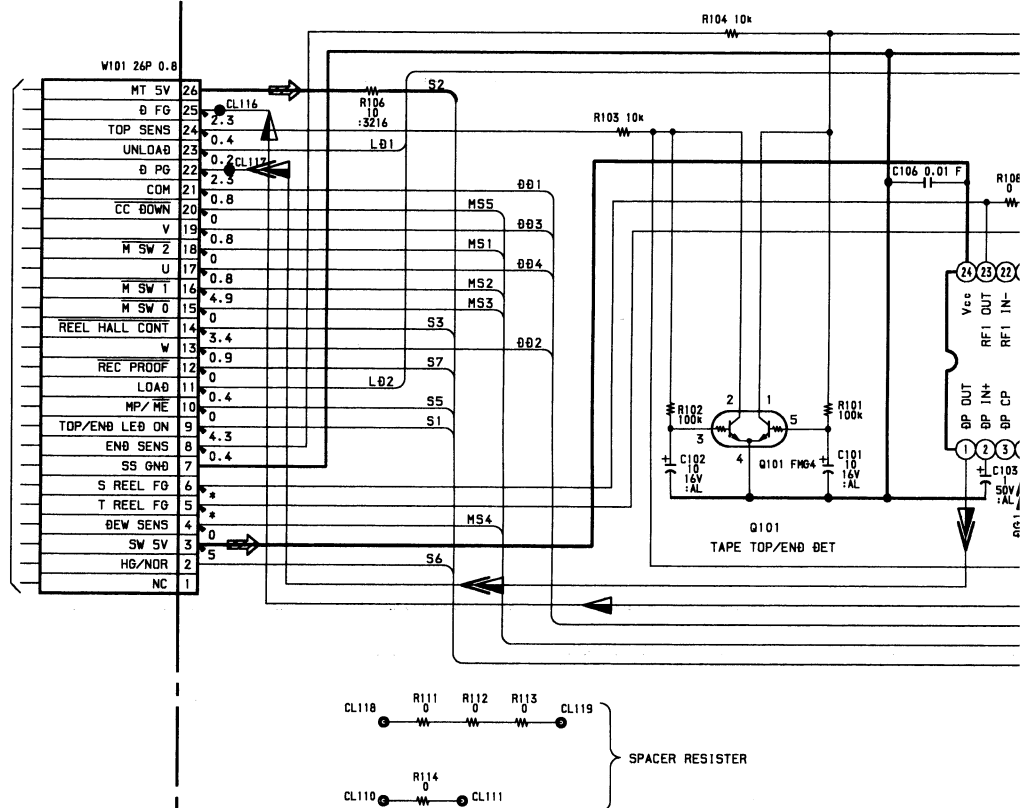
W101 26P 0.8

MT 5V 26
B FG 25
TOP SENS 24
UNLOAD 23
B PG 22
COM 21
CC DOWN 20
V 19
M SW 2 18
U 17
M SW 1 16
M SW 0 15
REEL HALL CONT 14
W 13
REC PROOF 12
LOAD 11
MP/ME 10
TOP/END LED ON 9
END SENS 8
SS GND 7
S REEL FG 6
T REEL FG 5
DEW SENS 4
SW 5V 3
HG/NOR 2
NC 1

CL116 2.5
0.4
0.2 CL117 2.3
0.8
0
0.8
0
0.8
4.9
0
3.4
0.9
0
0.4
0
4.3
0.4
*
*
0
5
1

R106 10k
R103 10k
R104 10k
R102 100k
R101 100k
C102 0.1F
C101 0.01F
C103 0.01F
C104 0.01F
C105 0.01F
C106 0.01F
C107 0.01F
C108 0.01F
C109 0.01F
C110 0.01F
C111 0.01F
C112 0.01F
C113 0.01F
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no mark:REC/PB mode
*: Can not be measured.

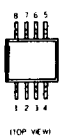


4	5	6	7	8	9	10	11	12	13	14	15
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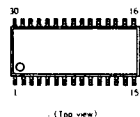


4-3. SEMICONDUCTOR

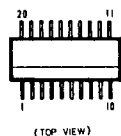
AK6420F



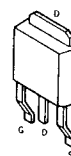
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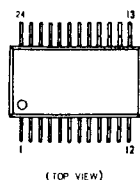
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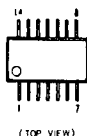
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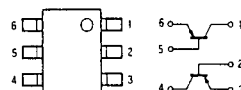
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LB8111V



CXL5502M
TL1596CDB



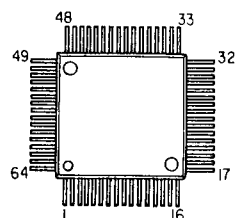
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UMT1



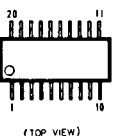
BR1102W



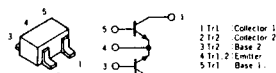
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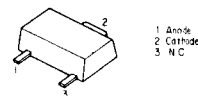
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MPC1720M



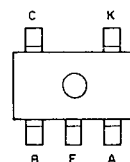
FMG4
FMW1



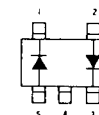
E10QS04



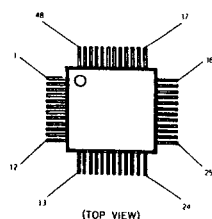
FP102



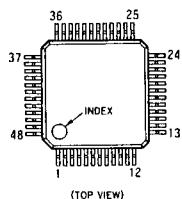
FC806



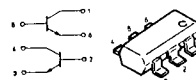
CXA1208R



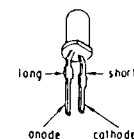
MB3785APFV-G-BND-ER



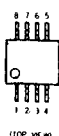
UMH2
UMX1
XN4213



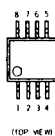
GL-3EG8



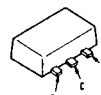
CXA1211M



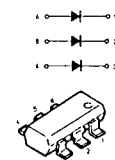
NJM2073M



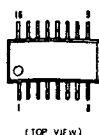
2SB1121



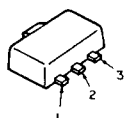
IMN10



CXA1452N
CXD2107M
CXL1506M
MC10H116M
XRU4052BF



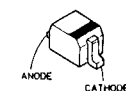
S-8054ALR-LN-S
S-81350HG-KD



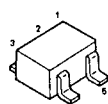
2SB1202FAS



MA8091



SC7S00F
TC4S11F
TC4S30F
TC4S66F

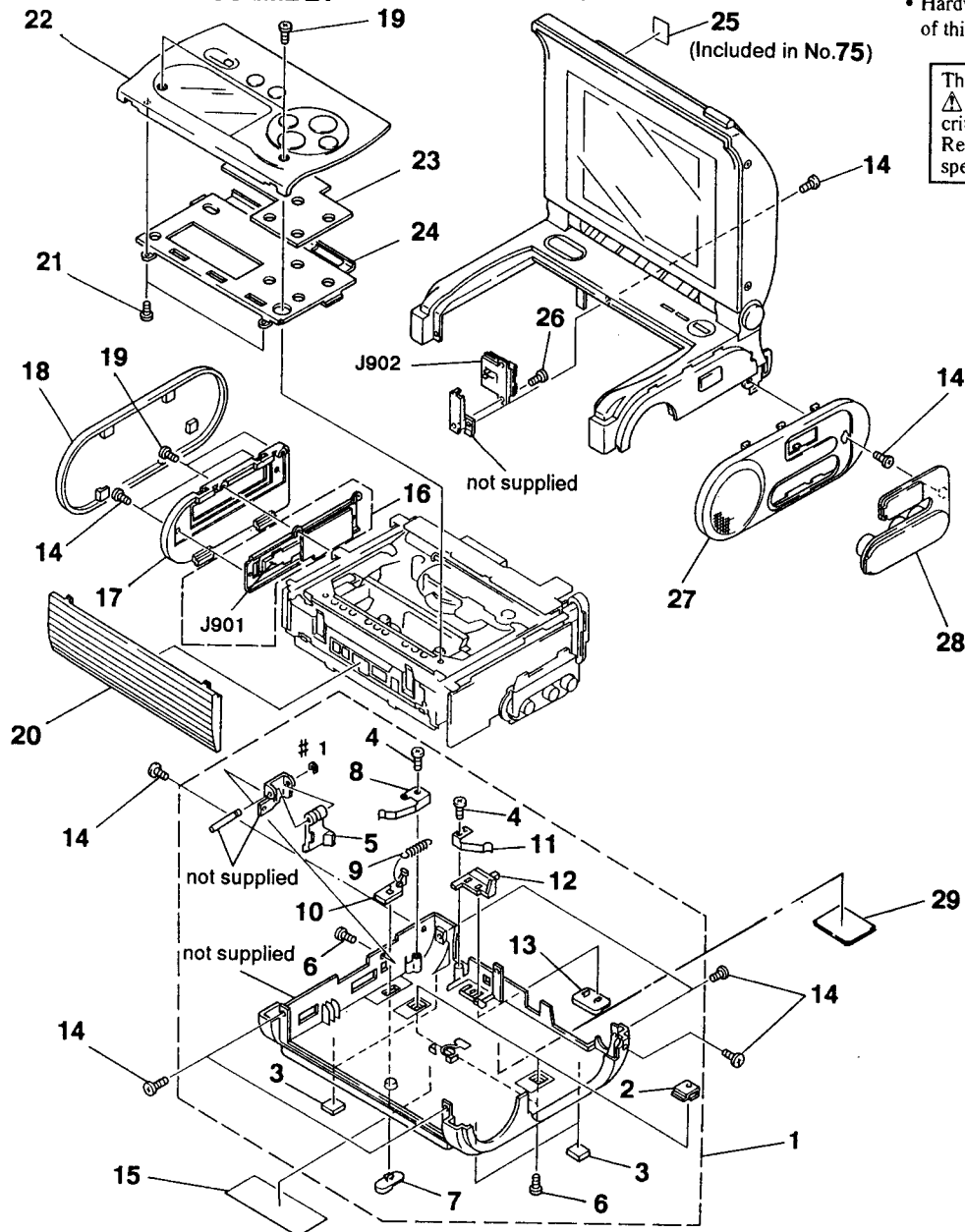


SECTION 5

EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some difference from the original one.

5-1. CABINET ASSEMBLY

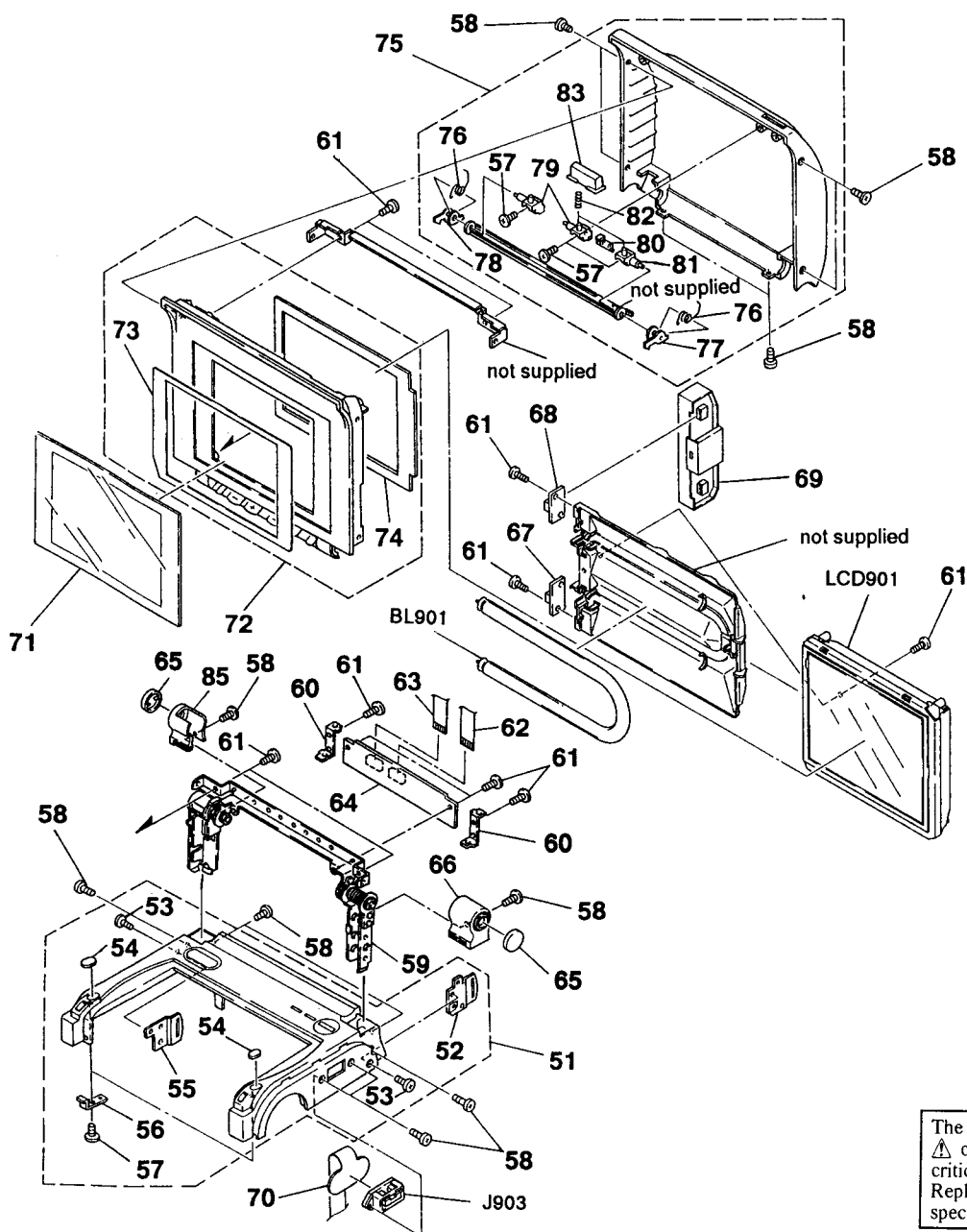
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

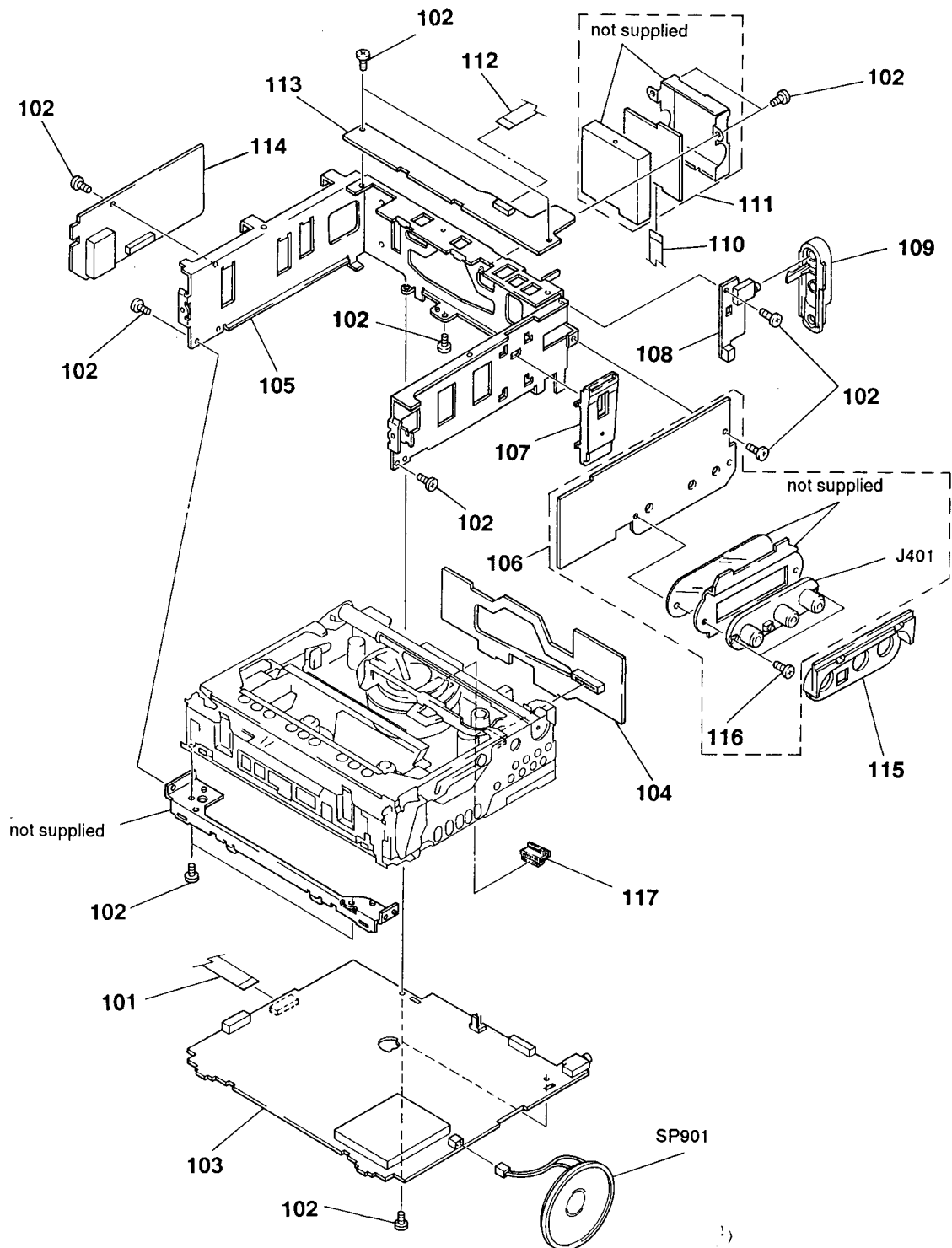
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3942-318-1	CABINET ASSY, LOWER		17	3-949-424-01	RAIL, TU	
2	3-736-496-01	BRACKET, STAND		18	3-949-425-01	CABINET (L), SIDE	
* 3	3-949-383-01	FOOT, RUBBER		19	3-733-912-41	SCREW (M2X9), SPECIAL HEAD	
4	3-945-884-01	SCREW (2X5)		20	X-3941-982-1	LID ASSY, LS	
5	3-949-471-01	KNOB, TU LOCK		21	3-713-790-11	SCREW (M2X5), TAPPING, P3	
6	3-713-786-81	SCREW (M2X2.5)		22	X-3942-029-1	LID ASSY, CASSETTE COMPARTMENT	
7	3-949-465-01	BUTTON, TU RELEASE		* 23	A-7071-699-A	FU-109 (A) BOARD, COMPLETE	
* 8	3-949-472-01	SPRING, TU LOCK		24	X-3942-225-1	BRACKET ASSY, FU	
9	3-949-470-01	SPRING, COIL		* 25	3-703-713-41	STICKER, SONY SYMBOL (10)	
* 10	3-949-473-01	SLIDER, TU		26	3-713-786-51	SCREW (M2X3)	
* 11	3-949-469-01	SPRING, BATT LOCK		27	X-3942-022-1	CABINET (R) ASSY, SIDE	
* 12	3-949-468-01	SLIDER, BATT		28	3-949-422-01	COVER, JACK	
13	3-949-467-01	BUTTON, BATT RELEASE		* 29	3-704-235-01	LABEL, CAUTION (UK)	
14	3-719-381-01	SCREW (M2X4)		J901	1-537-449-11	TERMINAL BOARD (TUNER/CAMERA)	
* 15	3-949-757-01	LABEL, MODEL NUMBER (AE)		J902	1-537-420-21	TERMINAL BOARD (BATTERY)	
* 16	A-7071-698-A	JK-86 BOARD, COMPLETE					

5-2. UPPER CABINET AND SC BLOCK ASSEMBLIES



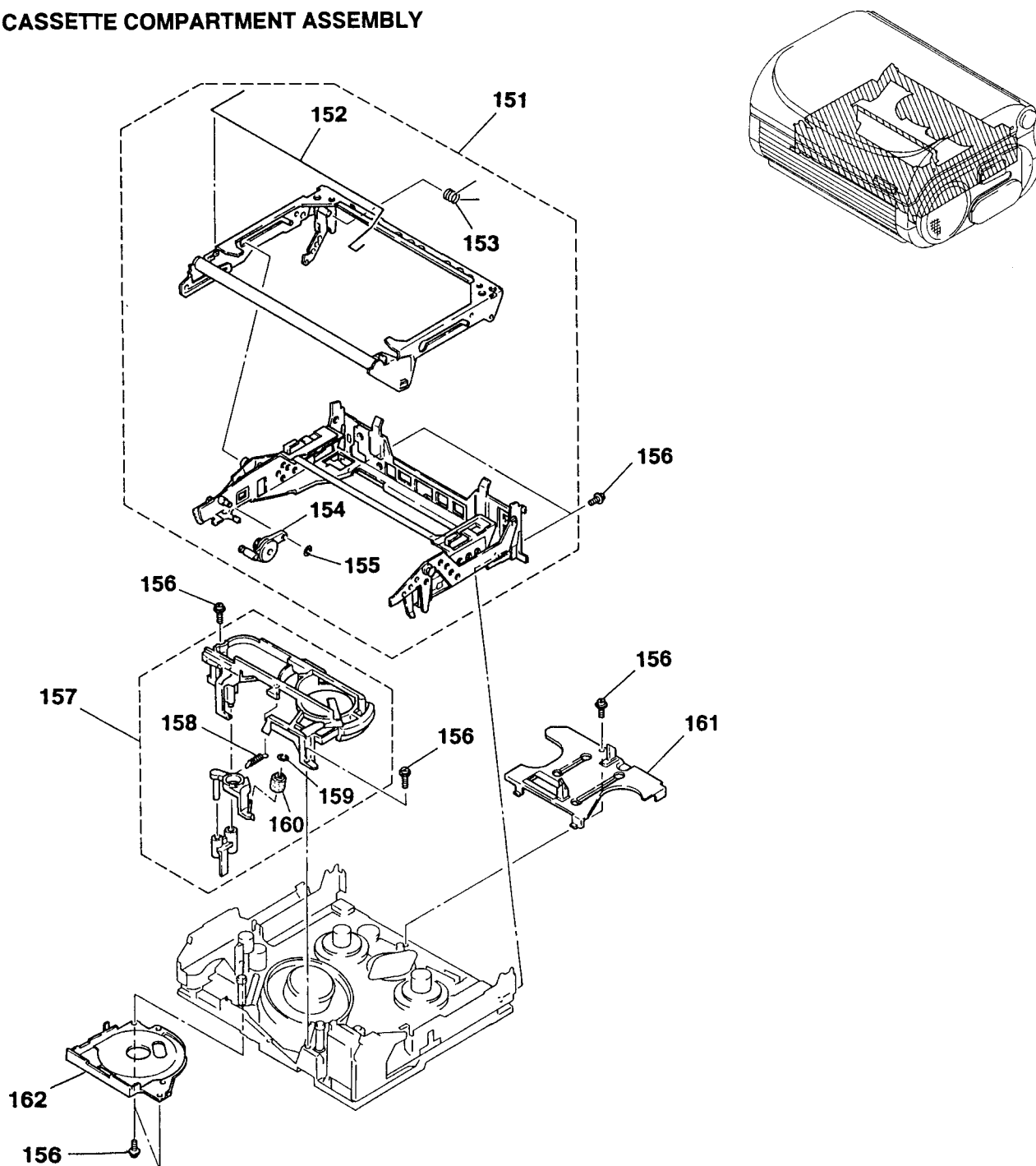
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-3942-036-1	CABINET ASSY, UPPER		70	1-645-369-11	FP-621 FLEXIBLE BOARD	
52	3-949-461-01	BRACKET (R), STRAP		71	3-949-413-01	WINDOW, SC	
53	3-713-786-81	SCREW (M2X2.5)		72	X-3942-035-1	CABINET ASSY, LOWER, SC	
54	3-949-464-01	CUSHION		73	3-949-408-01	SHEET, ADHESIVE, SC WINDOW	
55	3-949-462-01	BRACKET (L), STRAP		74	3-949-414-01	SHEET, DUST PROTECTION	
56	3-949-487-01	PLATE, LOCK		75	X-3942-037-1	CABINET ASSY, UPPER, SC	
57	3-945-884-01	SCREW (2X5)		76	3-949-426-01	SPRING, LOCK	
58	3-719-381-01	SCREW (M2X4)		* 77	3-949-415-01	ARM (R), LOCK	
59	X-3941-986-1	FRAME ASSY, HINGE		* 78	3-949-419-01	ARM (L), LOCK	
* 60	3-949-409-01	REINFORCEMENT, HINGE		79	3-949-430-01	FULCRUM BLOCK (B)	
61	3-713-790-11	SCREW (M2X5), TAPPING, P3		80	3-949-428-01	PLATE, SLIDE, LOCK	
62	1-645-364-11	FP-563 FLEXIBLE BOARD		81	3-949-427-01	FULCRUM BLOCK (A)	
63	1-645-368-11	FP-568 FLEXIBLE BOARD		82	3-944-333-01	SPRING, COMPRESSION	
* 64	A-7071-700-A	VR-39 (A) BOARD, COMPLETE		83	3-949-417-01	BUTTON, RELEASE	
65	3-949-411-01	CAP		84	3-949-412-01	COVER, L	
66	3-949-406-01	COVER, R		BL901	1-517-126-11	FLUORESCENT TUBE, HEAT CATHODE	
* 67	A-7071-714-A	LA-23 BOARD, COMPLETE		J903	1-580-009-21	SOCKET, CONNECTOR (SQUARE)12P(A/V OUT)	
* 68	A-7071-713-A	LA-22 BOARD, COMPLETE		LCD901	1-809-500-11	MODULE, COLOR LIQUID CRYSTAL	
▲ 69	1-466-791-11	INVERTER UNIT, DC/AC (DPS-28)					

5-3. MAIN BOARDS ASSEMBLY



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	1-645-995-11	FP-629 FLEXIBLE BOARD		111	A-7063-390-A	RP-152 BOARD, COMPLETE	
102	3-713-786-51	SCREW (M2X3)		112	1-645-366-11	FP-565 FLEXIBLE BOARD	
103	A-7053-392-A	MA-165 BOARD, COMPLETE		* 113	A-7071-697-A	PE-13 BOARD, COMPLETE	
* 104	A-7063-329-A	SL-26 BOARD, COMPLETE		114	A-7053-393-A	RG-26 BOARD, COMPLETE	
105	X-3942-265-1	FRAME ASSY		115	3-949-442-01	PLATE, JACK	
106	A-7053-391-A	AU-147 BOARD, COMPLETE		116	3-719-381-01	SCREW (M2X4)	
* 107	3-949-443-01	HOLDER, FLEXIBLE		117	1-691-471-11	CONNECTOR, TRANSLATION 11P	
* 108	A-7071-696-A	HP-84 (A) BOARD, COMPLETE		J401	1-569-556-11	JACK (AUDIO/VIDEO)	
109	3-949-407-11	CAP, HP		SP901	1-504-137-11	SPEAKER (3.6CM)	
110	1-645-367-11	FP-566 FLEXIBLE BOARD					

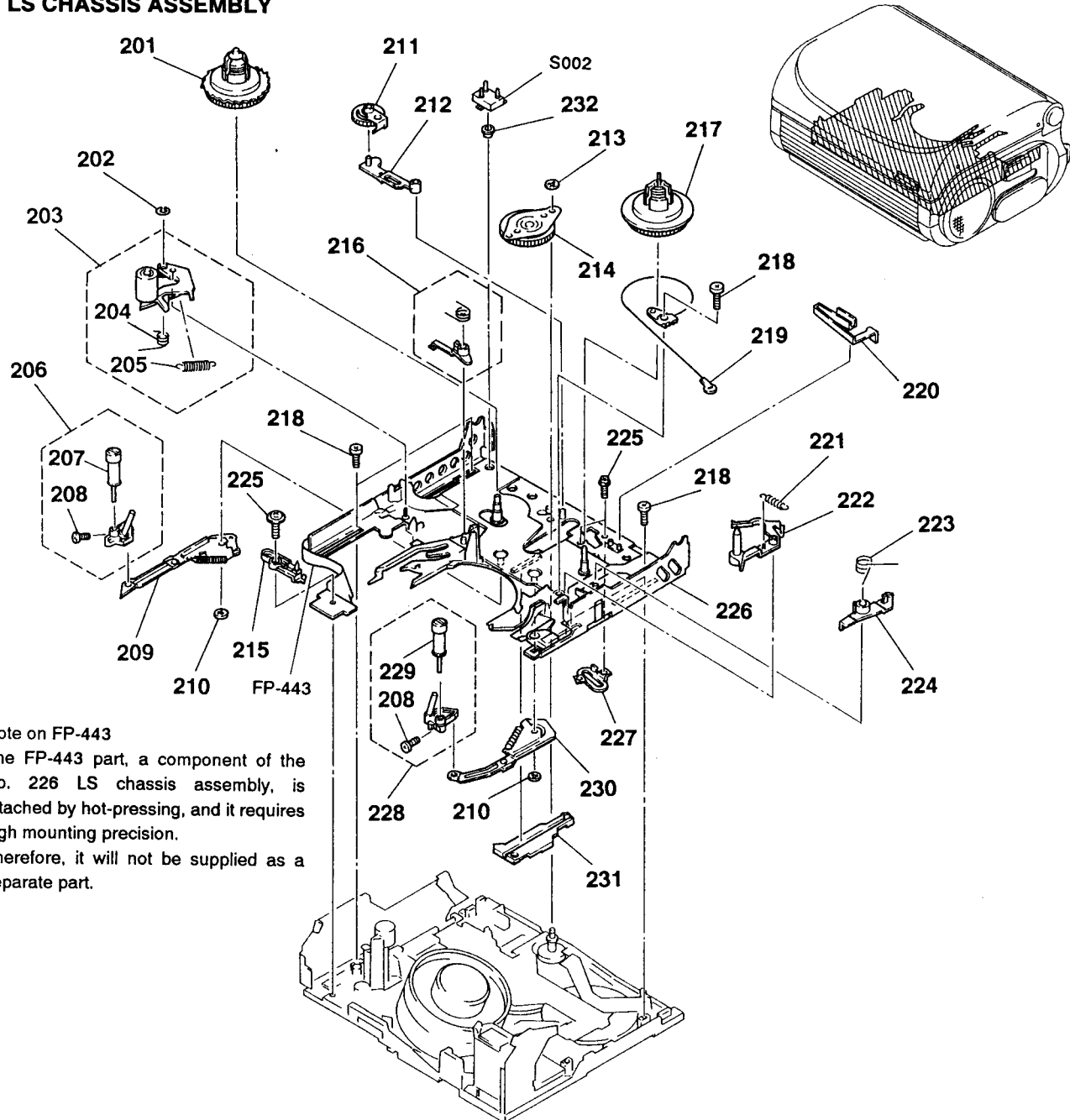
5-4. CASSETTE COMPARTMENT ASSEMBLY



Ref. No.	Part No.	Description	Remark
151	A-7040-312-A	CASSETTE COMPARTMENT BLOCK ASSY	
152	3-945-773-01	BAR, TORSION	
153	3-945-771-01	SPRING, TORSION	
154	X-3941-287-2	DAMPER ASSY	
155	3-315-384-31	WASHER, STOPPER	
156	3-947-503-01	SCREW (M1. 4X2. 5)	

Ref. No.	Part No.	Description	Remark
157	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
158	3-945-760-01	SPRING, TENSION	
159	3-321-393-01	WASHER, STOPPER	
160	X-3726-817-3	ROLLER ASSY, HC	
161	X-3941-280-1	RETAINER ASSY, GOOSENECK	
162	3-945-733-01	COVER, CAPSTAN	

5-5. LS CHASSIS ASSEMBLY

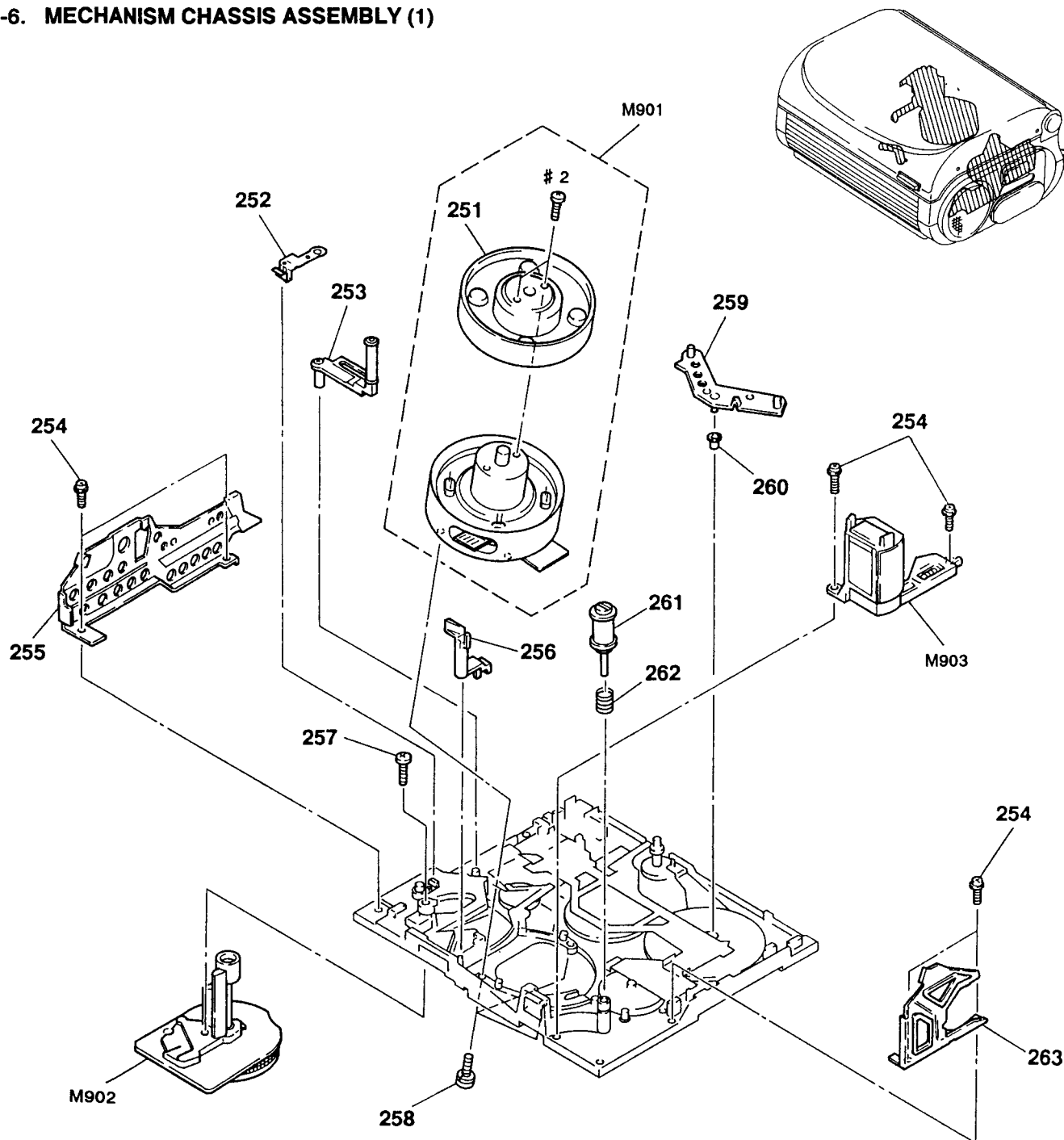


Note on FP-443

The FP-443 part, a component of the No. 226 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision. Therefore, it will not be supplied as a separate part.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
201	X-3941-274-1	TABLE ASSY, REEL, T		218	3-945-756-01	SCREW (M1.4X3)	
202	3-331-007-21	WASHER		219	X-3941-277-1	STRING BLOCK ASSY	
203	X-3941-271-1	ARM ASSY, PINCH		220	3-945-801-01	BRAKE, S SOFT	
204	3-945-743-01	SPRING, TORSION		221	3-948-810-01	SPRING, TENSION	
205	3-945-783-01	SPRING, TENSION		222	X-3941-276-1	TG1 ASSY	
206	A-7040-307-A	GUIDE (BASE) (T) BLOCK ASSY		223	3-945-752-01	SPRING, TORSION	
207	X-3941-424-1	ROLLER ASSY, TG6		224	3-945-799-01	BRAKE, S HARD	
208	3-947-504-01	SCREW (M1.2X2)		225	3-947-503-01	SCREW (M1.4X2.5)	
209	X-3941-267-1	ARM (T) ASSY, GUIDE		226	X-3941-265-1	CHASSIS ASSY, LS	
210	3-669-465-00	WASHER (1.5), STOPPER		227	3-945-784-01	PLATE, CAM, LS	
211	X-3941-273-1	SOFT ASSY, T		228	A-7040-306-A	GUIDE (BASE) (S) BLOCK ASSY	
212	3-945-753-01	ARM, T SOFT		229	X-3941-269-1	ROLLER ASSY, TG3	
213	3-726-829-01	WASHER, STOPPER		230	X-3941-266-1	ARM (S) ASSY, GUIDE	
214	X-3941-279-1	GEAR ASSY, GOOSENECK		231	3-945-837-01	SLIDER, GL	
215	3-947-644-01	RETAINER, TG5 (BASE)		232	3-949-881-01	SLEEVE	
216	A-7040-321-A	CLAW BLOCK ASSY, T HARD		S002	1-572-987-11	SWITCH, PUSH (3 KEY)	
217	X-3941-275-1	TABLE ASSY, REEL, S				(REC PROOF, ME/MP, MP/MP-HG)	

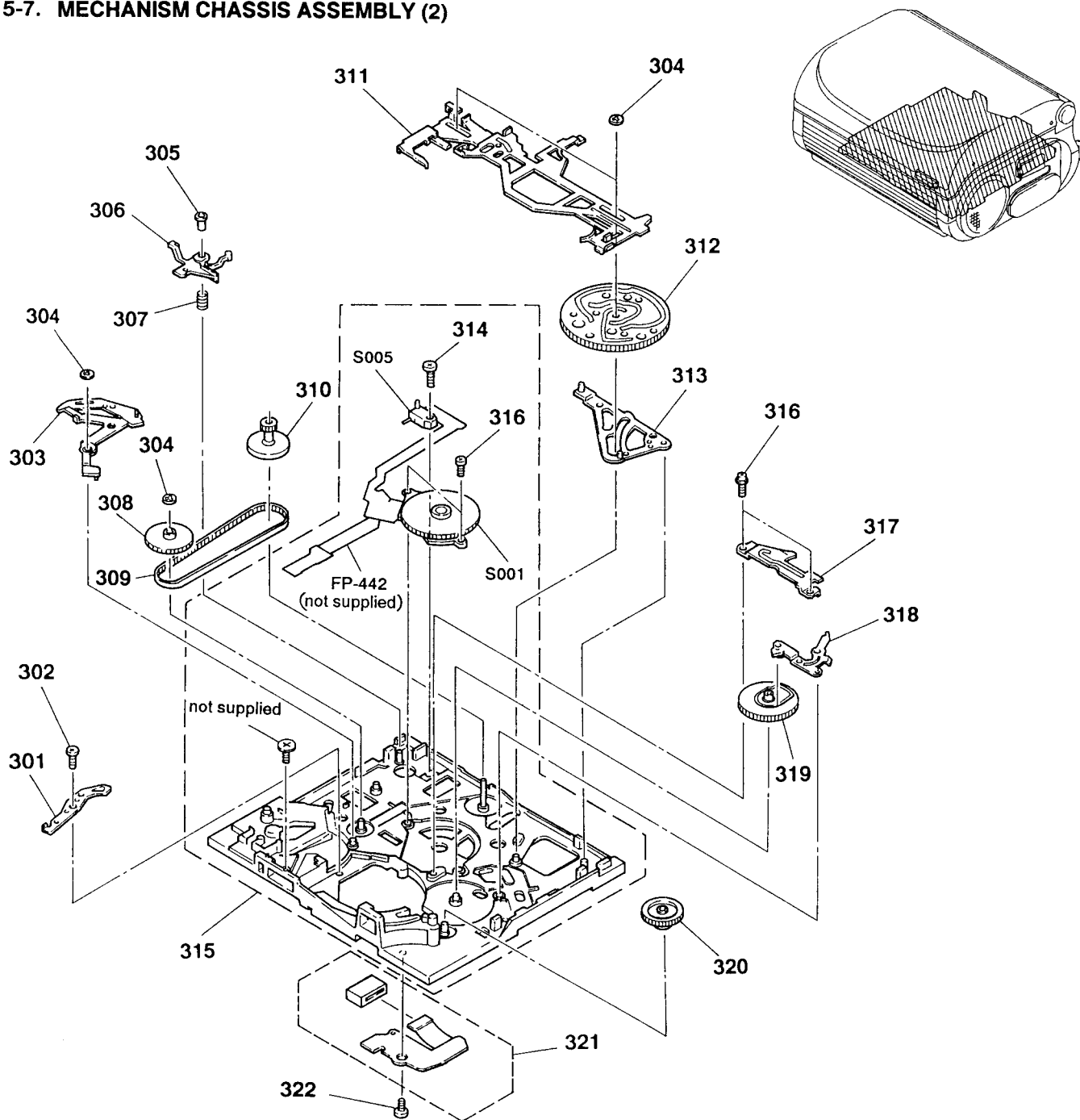
5-6. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description
251	A-7049-587-A	DRUM ASSY, UPPER (DGR-0A1-R)
252	3-945-822-01	SPRING, LEAF, TG7 ARM
253	A-7040-305-A	ARM BLOCK ASSY, TG7
254	3-947-503-01	SCREW (M1.4X2.5)
255	X-3941-255-1	PLATE (T) ASSY, SIDE
256	3-945-735-01	ARM, HC CONVERSION
257	3-713-786-71	SCREW (M2X5)
258	3-686-493-01	SCREW (M2X5), P1
259	3-945-701-01	ARM, LS

Ref. No.	Part No.	Description
260	3-945-702-01	ROLLER, LS
261	X-3941-262-1	ROLLER ASSY, TG2
262	3-945-774-01	SPRING, COMPRESSION
263	3-945-691-01	PLATE (S), SIDE
M901	A-7048-648-A	DRUM ASSY (DGH-0A1A-R)
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)

5-7. MECHANISM CHASSIS ASSEMBLY (2)



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
301	3-945-734-01	ARM, HC DRIVING		313	X-3941-258-1	ARM ASSY, GL	
302	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD		314	3-713-786-71	SCREW (M2X5)	
303	X-3941-259-1	ARM ASSY, PINCH PRESS		315	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
304	3-726-829-01	WASHER, STOPPER		316	3-947-503-01	SCREW (M1.4X2.5)	
305	3-945-730-01	SLEEVE, EJECT		317	3-945-722-01	RETAINER, GEAR	
306	3-945-706-01	LEVER, EJECT		318	X-3941-257-1	ARM ASSY, FF	
307	3-945-729-01	SPRING, COMPRESSION		319	3-945-697-01	GEAR (B), L	
308	X-3941-256-1	GEAR ASSY, CHANGE		320	3-945-700-01	GEAR (A), L	
309	3-944-539-01	BELT, RELAY		321	A-7040-311-A	FP-444 ASSY	
310	3-945-695-01	PULLEY, RELAY		322	3-945-756-01	SCREW (M1.4X3)	
311	X-3941-260-1	SLIDER ASSY, M		S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
312	3-945-696-01	CAM		S005	1-570-771-21	SWITCH (C DOWN)	

SECTION 6

ELECTRICAL PARTS LIST

AU-147

NOTE:

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA...,
uPB...: μ PB..., uPC...: μ PC...,
uPD...: μ PD...
- CAPACITORS
uF : μ F
- COILS
uH : μ H

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-7053-391-A	AU-147 BOARD, COMPLETE *****		C437	1-126-607-11	ELECT CHIP 47uF 20% 4V	
	3-719-381-01	SCREW (M2X4)		C438	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
		< CAPACITOR >		C439	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C052	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V		C440	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C053	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V		C441	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C054	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V		C442	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C055	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V		C443	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C056	1-135-145-11	TANTALUM CHIP 0.47uF 10% 35V		C444	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C057	1-135-177-21	TANTALUM CHIP 1uF 20% 20V		C445	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C058	1-128-004-11	ELECT CHIP 10uF 20% 16V		C446	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C059	1-126-205-11	ELECT CHIP 47uF 20% 6.3V		C447	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C060	1-126-205-11	ELECT CHIP 47uF 20% 6.3V		C448	1-135-145-11	TANTALUM CHIP 0.47uF 10% 35V	
C061	1-128-003-11	ELECT CHIP 22uF 20% 4V		C449	1-135-145-11	TANTALUM CHIP 0.47uF 10% 35V	
C062	1-164-634-11	CERAMIC CHIP 1uF 16V		C450	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C063	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V		C451	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C064	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V		C452	1-162-959-11	CERAMIC CHIP 330PF 5% 50V	
C065	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V		C453	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C066	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V		C454	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C067	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V		C455	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C068	1-135-156-21	TANTALUM CHIP 6.8uF 10% 10V		C456	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C069	1-128-004-11	ELECT CHIP 10uF 20% 16V		C470	1-164-634-11	CERAMIC CHIP 1uF 16V	
C070	1-162-974-11	CERAMIC CHIP 0.01uF 50V		C471	1-164-634-11	CERAMIC CHIP 1uF 16V	
C098	1-164-505-11	CERAMIC CHIP 2.2uF 16V		C472	1-164-634-11	CERAMIC CHIP 1uF 16V	
C099	1-164-505-11	CERAMIC CHIP 2.2uF 16V		C473	1-164-634-11	CERAMIC CHIP 1uF 16V	
C420	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V		C477	1-126-205-11	ELECT CHIP 47uF 20% 6.3V	
C421	1-162-974-11	CERAMIC CHIP 0.01uF 50V		C488	1-135-181-21	TANTAL. CHIP 4.7uF 20% 6.3V	
C422	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V		C488	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C423	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V		C489	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C424	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V		C501	1-164-634-11	CERAMIC CHIP 1uF 16V	
C425	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V		C502	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C426	1-126-607-11	ELECT CHIP 47uF 20% 4V		C503	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C427	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V		C504	1-164-634-11	CERAMIC CHIP 1uF 16V	
C428	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V		C510	1-164-634-11	CERAMIC CHIP 1uF 16V	
C429	1-135-259-11	TANTALUM CHIP 10uF 20% 6.3V		C511	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C430	1-126-207-11	ELECT CHIP 33uF 20% 4V		C512	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C431	1-126-607-11	ELECT CHIP 47uF 20% 4V		C513	1-164-634-11	CERAMIC CHIP 1uF 16V	
C432	1-126-607-11	ELECT CHIP 47uF 20% 4V		C530	1-164-634-11	CERAMIC CHIP 1uF 16V	
C433	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V		C531	1-164-634-11	CERAMIC CHIP 1uF 16V	
C434	1-126-205-11	ELECT CHIP 47uF 20% 6.3V		C532	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C435	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V		C533	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C436	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V		C541	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
				C542	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
				C543	1-162-974-11	CERAMIC CHIP 0.01uF 50V	

AU-147

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C544	1-162-974-11	CERAMIC CHIP 0.01uF	50V	< TRANSISTOR >			
C545	1-162-974-11	CERAMIC CHIP 0.01uF	50V	Q051	8-729-928-81	TRANSISTOR DTC144EE	
C546	1-162-974-11	CERAMIC CHIP 0.01uF	50V	Q052	8-729-202-38	TRANSISTOR 2SC3326N-A	
C547	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	Q053	8-729-202-38	TRANSISTOR 2SC3326N-A	
C548	1-162-969-11	CERAMIC CHIP 0.0068uF 10%	25V	Q054	8-729-927-XX	TRANSISTOR 2SC4617R	
C549	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	Q055	8-729-927-62	TRANSISTOR UMX1	
C570	1-128-007-11	ELECT CHIP 2.2uF 20%	35V	Q056	8-729-928-90	TRANSISTOR DTC114EE	
C571	1-126-205-11	ELECT CHIP 47uF 20%	6.3V	Q057	8-729-141-48	TRANSISTOR 2SB624-BV345	
C580	1-164-634-11	CERAMIC CHIP 1uF	16V	Q404	8-729-927-XX	TRANSISTOR 2SC4617R	
C581	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V	Q405	8-729-927-XX	TRANSISTOR 2SC4617R	
C582	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V	Q406	8-729-930-13	TRANSISTOR UMH2	
C583	1-126-205-21	ELECT CHIP 47uF 20%	6.3V	Q408	8-729-927-XX	TRANSISTOR 2SC4617R	
C591	1-164-634-11	CERAMIC CHIP 1uF	16V	Q409	8-729-927-XX	TRANSISTOR 2SC4617R	
C592	1-163-058-00	CERAMIC CHIP 8200PF 10%	50V	Q410	8-729-927-62	TRANSISTOR UMX1	
C593	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	Q411	8-729-927-XX	TRANSISTOR 2SC4617R	
< DIODE >				Q412	8-729-928-81	TRANSISTOR DTC144EE	
D054	8-719-989-03	DIODE DAN222		Q413	8-729-927-62	TRANSISTOR UMX1	
D055	8-719-989-03	DIODE DAN222		Q414	8-729-927-XX	TRANSISTOR 2SC4617R	
D401	8-719-989-03	DIODE DAN222		Q415	8-729-928-19	TRANSISTOR 2SA1774R	
D402	8-719-989-00	DIODE DA221		Q416	8-729-928-81	TRANSISTOR DTC144EE	
D403	8-719-420-81	DIODE MA3075WA		Q417	8-729-928-19	TRANSISTOR 2SA1774R	
D404	8-719-420-81	DIODE MA3075WA		Q418	8-729-927-XX	TRANSISTOR 2SC4617R	
D405	8-719-420-81	DIODE MA3075WA		Q419	8-729-141-48	TRANSISTOR 2SB624-BV345	
< FILTER >				Q428	8-729-928-81	TRANSISTOR DTC144EE	
FL401	1-236-838-21	FILTER, BAND PASS		Q501	8-729-927-XX	TRANSISTOR 2SC4617R	
FL402	1-236-837-21	FILTER, BAND PASS		Q502	8-729-927-XX	TRANSISTOR 2SC4617R	
< IC >				Q591	8-729-929-26	TRANSISTOR DTC114TE	
IC041	8-759-510-56	IC BA3570FS		Q592	8-729-929-26	TRANSISTOR DTC114TE	
IC042	8-759-701-02	IC NJM2073M		Q593	8-729-928-81	TRANSISTOR DTC144EE	
IC043	8-759-234-77	IC TC4S66F		< RESISTOR >			
IC401	8-759-077-12	IC CXA1542R		R051	1-216-845-11	METAL CHIP 100K 5% 1/16W	
IC403	8-752-053-21	IC CXA1211M		R052	1-216-845-11	METAL CHIP 100K 5% 1/16W	
IC404	8-759-008-67	IC MC14066BF		R053	1-216-845-11	METAL CHIP 100K 5% 1/16W	
IC406	8-759-008-67	IC MC14066BF		R054	1-216-845-11	METAL CHIP 100K 5% 1/16W	
< JACK >				R055	1-216-833-11	METAL CHIP 10K 5% 1/16W	
J401	1-569-556-11	JACK (A/V OUT)		R056	1-216-821-11	METAL CHIP 1K 5% 1/16W	
< COIL >				R057	1-216-857-11	METAL CHIP 1M 5% 1/16W	
L052	1-412-031-11	INDUCTOR CHIP 47uH		R058	1-216-833-11	METAL CHIP 10K 5% 1/16W	
L401	1-412-031-11	INDUCTOR CHIP 47uH		R059	1-216-821-11	METAL CHIP 1K 5% 1/16W	
L402	1-412-029-11	INDUCTOR CHIP 10uH		R061	1-216-015-00	METAL CHIP 39 5% 1/10W	
< LINK, IC >				R062	1-216-845-11	METAL CHIP 100K 5% 1/16W	
△PS401	1-576-124-21	LINK, IC CCP2E25 (1A)		R063	1-216-845-11	METAL CHIP 100K 5% 1/16W	
△PS402	1-576-124-21	LINK, IC CCP2E25 (1A)		R064	1-216-015-00	METAL CHIP 39 5% 1/10W	
				R065	1-216-821-11	METAL CHIP 1K 5% 1/16W	
				R067	1-216-821-11	METAL CHIP 1K 5% 1/16W	
				R068	1-216-833-11	METAL CHIP 10K 5% 1/16W	
				R069	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
				R070	1-216-833-11	METAL CHIP 10K 5% 1/16W	
				R071	1-216-815-11	METAL CHIP 330 5% 1/16W	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R072	1-216-833-11	METAL CHIP	10K	5%	1/16W	R518	1-216-818-11	METAL CHIP	560	5%	1/16W
R073	1-216-789-11	METAL CHIP	2. 2	5%	1/16W	R519	1-216-833-11	METAL CHIP	10K	5%	1/16W
R074	1-216-841-11	METAL CHIP	47K	5%	1/16W	R520	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R075	1-216-831-11	METAL CHIP	6. 8K	5%	1/16W	R521	1-216-849-11	METAL CHIP	220K	5%	1/16W
R076	1-216-837-11	METAL CHIP	22K	5%	1/16W	R530	1-216-845-11	METAL CHIP	100K	5%	1/16W
R077	1-216-841-11	METAL CHIP	47K	5%	1/16W	R531	1-216-845-11	METAL CHIP	100K	5%	1/16W
R085	1-216-013-00	METAL CHIP	33	5%	1/10W	R532	1-216-857-11	METAL CHIP	1M	5%	1/16W
R086	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R533	1-216-849-11	METAL CHIP	220K	5%	1/16W
R087	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R534	1-216-861-11	METAL CHIP	2. 2M	5%	1/16W
R089	1-216-833-11	METAL CHIP	10K	5%	1/16W	R535	1-216-841-11	METAL CHIP	47K	5%	1/16W
R090	1-216-833-11	METAL CHIP	10K	5%	1/16W	R536	1-216-845-11	METAL CHIP	100K	5%	1/16W
R425	1-218-740-11	METAL CHIP	100K	0. 50%	1/16W	R537	1-216-845-11	METAL CHIP	100K	5%	1/16W
R427	1-218-740-11	METAL CHIP	100K	0. 50%	1/16W	R540	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R430	1-216-836-11	METAL CHIP	18K	5%	1/16W	R541	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W
R431	1-216-833-11	METAL CHIP	10K	5%	1/16W	R542	1-216-837-11	METAL CHIP	22K	5%	1/16W
R432	1-216-830-11	METAL CHIP	5. 6K	5%	1/16W	R543	1-216-836-11	METAL CHIP	18K	5%	1/16W
R433	1-216-857-11	METAL CHIP	1M	5%	1/16W	R544	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W
R434	1-216-834-11	METAL CHIP	12K	5%	1/16W	R545	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W
R435	1-216-830-11	METAL CHIP	5. 6K	5%	1/16W	R546	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W
R436	1-216-833-11	METAL CHIP	10K	5%	1/16W	R547	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W
R437	1-216-836-11	METAL CHIP	18K	5%	1/16W	R548	1-216-833-11	METAL CHIP	10K	5%	1/16W
R438	1-216-795-11	METAL CHIP	6. 8K	0. 50%	1/16W	R549	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W
R439	1-216-295-00	METAL CHIP	0	5%	1/10W	R551	1-216-837-11	METAL CHIP	22K	5%	1/16W
R440	1-216-845-11	METAL CHIP	100K	5%	1/16W	R552	1-216-836-11	METAL CHIP	18K	5%	1/16W
R441	1-216-864-11	METAL CHIP	0	5%	1/16W	R553	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W
R442	1-216-883-11	METAL CHIP	33K	0. 50%	1/16W	R554	1-216-816-11	METAL CHIP	390	5%	1/16W
R443	1-216-845-11	METAL CHIP	100K	5%	1/16W	R555	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W
R444	1-216-864-11	METAL CHIP	0	5%	1/16W	R556	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W
R445	1-218-740-11	METAL CHIP	100K	0. 50%	1/16W	R557	1-216-837-11	METAL CHIP	22K	5%	1/16W
R446	1-218-714-11	METAL CHIP	8. 2K	0. 50%	1/16W	R558	1-216-836-11	METAL CHIP	18K	5%	1/16W
R460	1-216-818-11	METAL CHIP	560	5%	1/16W	R559	1-216-821-11	METAL CHIP	1K	5%	1/16W
R461	1-216-818-11	METAL CHIP	560	5%	1/16W	R560	1-216-821-11	METAL CHIP	1K	5%	1/16W
R462	1-216-818-11	METAL CHIP	560	5%	1/16W	R561	1-216-821-11	METAL CHIP	1K	5%	1/16W
R463	1-216-818-11	METAL CHIP	560	5%	1/16W	R562	1-216-821-11	METAL CHIP	1K	5%	1/16W
R469	1-216-841-11	METAL CHIP	47K	5%	1/16W	R563	1-216-864-11	METAL CHIP	0	5%	1/16W
R475	1-218-740-11	METAL CHIP	100K	0. 50%	1/16W	R564	1-216-821-11	METAL CHIP	1K	5%	1/16W
R476	1-216-295-00	METAL CHIP	0	5%	1/10W	R569	1-216-864-11	METAL CHIP	0	5%	1/16W
R477	1-216-013-00	METAL CHIP	33	5%	1/10W	R572	1-216-845-11	METAL CHIP	100K	5%	1/16W
R478	1-216-833-11	METAL CHIP	10K	5%	1/16W	R573	1-216-841-11	METAL CHIP	47K	5%	1/16W
R479	1-216-833-11	METAL CHIP	10K	5%	1/16W	R574	1-216-821-11	METAL CHIP	1K	5%	1/16W
R501	1-216-821-11	METAL CHIP	1K	5%	1/16W	R575	1-216-848-11	METAL CHIP	180K	5%	1/16W
R502	1-216-821-11	METAL CHIP	1K	5%	1/16W	R576	1-216-864-11	METAL CHIP	0	5%	1/16W
R505	1-216-842-11	METAL CHIP	56K	5%	1/16W	R580	1-216-836-11	METAL CHIP	18K	5%	1/16W
R506	1-216-841-11	METAL CHIP	47K	5%	1/16W	R581	1-216-821-11	METAL CHIP	1K	5%	1/16W
R507	1-216-810-11	METAL CHIP	120	5%	1/16W	R582	1-216-830-11	METAL CHIP	5. 6K	5%	1/16W
R508	1-216-818-11	METAL CHIP	560	5%	1/16W	R583	1-216-304-11	METAL CHIP	3. 3	5%	1/10W
R509	1-216-833-11	METAL CHIP	10K	5%	1/16W	R584	1-216-847-11	METAL CHIP	150K	5%	1/16W
R515	1-216-842-11	METAL CHIP	56K	5%	1/16W	R585	1-216-847-11	METAL CHIP	150K	5%	1/16W
R516	1-216-841-11	METAL CHIP	47K	5%	1/16W	R586	1-216-838-11	METAL CHIP	27K	5%	1/16W
R517	1-216-810-11	METAL CHIP	120	5%	1/16W	R587	1-216-838-11	METAL CHIP	27K	5%	1/16W

LA-22

LA-23

MA-165

Ref. No.	Part No.	Description	Remark
*	A-7071-713-A	LA-22 BOARD, COMPLETE *****	
		(CONNECTOR)	
CN801	1-569-628-12	CONNECTOR, BOARD TO BOARD 3P	

*	A-7071-714-A	LA-23 BOARD, COMPLETE *****	
		(CONNECTOR)	
CN802	1-569-628-12	CONNECTOR, BOARD TO BOARD 3P	

*	A-7053-392-A	MA-165 BOARD, COMPLETE *****	
	3-719-381-01	SCREW (M2X4)	
		(CAPACITOR)	
C001	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C002	1-162-966-11	CERAMIC CHIP 0.002uF 10% 50V	
C003	1-162-966-11	CERAMIC CHIP 0.002uF 10% 50V	
C004	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C005	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C006	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C007	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C008	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C011	1-163-183-00	CERAMIC CHIP 120PF 5% 50V	
C012	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C013	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C015	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C017	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C018	1-164-473-11	CERAMIC CHIP 820PF 10% 50V	
C019	1-164-473-11	CERAMIC CHIP 820PF 10% 50V	
C020	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C021	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C022	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C023	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C024	1-164-634-11	CERAMIC CHIP 1uF 16V	
C025	1-164-634-11	CERAMIC CHIP 1uF 16V	
C026	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C027	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C028	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C029	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C030	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C031	1-162-638-11	CERAMIC CHIP 1uF 16V	
C032	1-164-337-11	CERAMIC CHIP 2.2uF 16V	
C033	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C034	1-162-638-11	CERAMIC CHIP 1uF 16V	

Ref. No.	Part No.	Description	Remark
C035	1-164-634-11	CERAMIC CHIP 1uF 16V	
C036	1-164-337-11	CERAMIC CHIP 2.2uF 16V	
C037	1-162-638-11	CERAMIC CHIP 1uF 16V	
C038	1-135-212-21	TANTAL. CHIP 2.2uF 20% 35V	
C039	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C040	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C041	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C042	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C043	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C044	1-164-836-11	CERAMIC CHIP 6.8uF 16V	
C091	1-164-634-11	CERAMIC CHIP 1uF 16V	
C092	1-164-506-11	CERAMIC CHIP 4.7uF 16V	
C093	1-164-634-11	CERAMIC CHIP 1uF 16V	
C094	1-164-634-11	CERAMIC CHIP 1uF 16V	
C096	1-164-506-11	CERAMIC CHIP 4.7uF 16V	
C097	1-164-634-11	CERAMIC CHIP 1uF 16V	
C101	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C102	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C103	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C104	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C106	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C108	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C109	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C110	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C111	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C112	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C113	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C114	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C115	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C116	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C117	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C118	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C119	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C120	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C121	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C122	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C123	1-164-362-11	CERAMIC CHIP 470PF 5% 50V	
C124	1-162-918-11	CERAMIC CHIP 18PF 5% 50V	
C125	1-162-917-11	CERAMIC CHIP 15PF 5% 50V	
C126	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C127	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C128	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C129	1-162-905-11	CERAMIC CHIP 1PF 0.25PF 50V	
C130	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C131	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C132	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C133	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C135	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C136	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C137	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	

MA-165

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C138	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C237	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C139	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C238	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C140	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C239	1-164-634-11	CERAMIC CHIP 1uF	16V
C141	1-164-634-11	CERAMIC CHIP 1uF	16V	C240	1-164-634-11	CERAMIC CHIP 1uF	16V
C142	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C245	1-135-092-21	TANTALUM CHIP 3.3uF	10% 16V
C143	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C246	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C144	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C247	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C145	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C248	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C146	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C250	1-135-180-21	TANTALUM CHIP 3.3uF	20% 6.3V
C147	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C251	1-162-943-11	CERAMIC CHIP 15PF	5% 50V
C148	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C252	1-162-943-11	CERAMIC CHIP 15PF	5% 50V
C149	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C254	1-164-634-11	CERAMIC CHIP 1uF	16V
C150	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C255	1-162-949-11	CERAMIC CHIP 47PF	5% 50V
C151	1-135-216-11	TANTALUM CHIP 10uF	20% 10V	C256	1-162-949-11	CERAMIC CHIP 47PF	5% 50V
C152	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C257	1-162-949-11	CERAMIC CHIP 47PF	5% 50V
C153	1-135-216-11	TANTALUM CHIP 10uF	20% 10V	C258	1-162-949-11	CERAMIC CHIP 47PF	5% 50V
C154	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C301	1-164-634-11	CERAMIC CHIP 1uF	16V
C155	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C302	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C157	1-162-927-11	CERAMIC CHIP 100PF	5% 50V	C303	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C158	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V	C304	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C159	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C305	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C160	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C306	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C161	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C307	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C201	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C308	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C202	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C309	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V
C203	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C310	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V
C204	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C311	1-162-995-11	CERAMIC CHIP 0.022uF	50V
C205	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C312	1-162-945-11	CERAMIC CHIP 22PF	5% 50V
C206	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C313	1-162-945-11	CERAMIC CHIP 22PF	5% 50V
C211	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C314	1-164-173-11	CERAMIC CHIP 0.0039uF	10% 50V
C212	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C315	1-164-634-11	CERAMIC CHIP 1uF	16V
C215	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C316	1-135-211-11	TANTAL. CHIP 6.8uF	20% 6.3V
C216	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C317	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C217	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C318	1-164-634-11	CERAMIC CHIP 1uF	16V
C218	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C320	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C220	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C321	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C222	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C322	1-165-128-11	CERAMIC CHIP 0.22uF	16V
C224	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C324	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V
C225	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C325	1-163-809-11	CERAMIC CHIP 0.047uF	10% 25V
C226	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C326	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V
C227	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C327	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C228	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C328	1-162-965-11	CERAMIC CHIP 0.0015uF	10% 50V
C229	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C329	1-162-965-11	CERAMIC CHIP 0.0015uF	10% 50V
C230	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C330	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C231	1-164-634-11	CERAMIC CHIP 1uF	16V	C331	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C232	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C341	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C233	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C342	1-135-216-11	TANTALUM CHIP 10uF	20% 10V
C234	1-162-945-11	CERAMIC CHIP 22PF	5% 50V	C343	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C235	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C344	1-135-180-21	TANTALUM CHIP 3.3uF	20% 6.3V
C236	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C345	1-164-330-21	CERAMIC CHIP 0.22uF	10% 16V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C346	1-164-330-21	CERAMIC CHIP 0.22uF	10% 16V	C681	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C347	1-135-216-11	TANTALUM CHIP 10uF	20% 10V	C683	1-162-959-11	CERAMIC CHIP 330PF	5% 50V
C349	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C684	1-162-995-11	CERAMIC CHIP 0.022uF	50V
C350	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C685	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C351	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C687	1-162-995-11	CERAMIC CHIP 0.022uF	50V
C352	1-162-967-11	CERAMIC CHIP 0.0033uF	10% 50V	C688	1-162-995-11	CERAMIC CHIP 0.022uF	50V
C353	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V	C689	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C354	1-162-968-11	CERAMIC CHIP 0.0047uF	10% 50V	C691	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C356	1-162-968-11	CERAMIC CHIP 0.0047uF	10% 50V	C694	1-162-948-11	CERAMIC CHIP 39PF	5% 50V
C358	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V	C695	1-162-918-11	CERAMIC CHIP 18PF	5% 50V
C359	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V	C696	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C360	1-164-633-11	CERAMIC CHIP 0.1uF	10% 25V	C697	1-162-943-11	CERAMIC CHIP 15PF	5% 50V
C601	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C698	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C607	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C699	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C608	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C702	1-162-957-11	CERAMIC CHIP 220PF	5% 50V
C614	1-164-461-11	CERAMIC CHIP 91PF	5% 50V	C703	1-135-201-11	TANTALUM CHIP 10uF	20% 4V
C615	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C706	1-135-201-11	TANTALUM CHIP 10uF	20% 4V
C616	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C707	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C617	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C708	1-162-959-11	CERAMIC CHIP 330PF	5% 50V
C618	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C709	1-164-145-11	CERAMIC CHIP 390PF	5% 50V
C619	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C710	1-164-467-11	CERAMIC CHIP 300PF	5% 50V
C620	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C711	1-135-201-11	TANTALUM CHIP 10uF	20% 4V
C621	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C712	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C622	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C713	1-162-957-11	CERAMIC CHIP 220PF	5% 50V
C624	1-164-457-11	CERAMIC CHIP 30PF	5% 50V	C714	1-162-955-11	CERAMIC CHIP 150PF	5% 50V
C625	1-162-951-11	CERAMIC CHIP 68PF	5% 50V	C715	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C626	1-162-954-11	CERAMIC CHIP 120PF	5% 50V	C716	1-135-201-11	TANTALUM CHIP 10uF	20% 4V
C627	1-162-955-11	CERAMIC CHIP 150PF	5% 50V	C717	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C629	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C718	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C630	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C719	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C631	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C720	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C652	1-162-921-11	CERAMIC CHIP 33PF	5% 50V	C721	1-135-180-21	TANTALUM CHIP 3.3uF	20% 6.3V
C653	1-162-958-11	CERAMIC CHIP 270PF	5% 50V	C722	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C657	1-162-950-11	CERAMIC CHIP 56PF	5% 50V	C723	1-135-201-11	TANTALUM CHIP 10uF	20% 4V
C658	1-162-952-11	CERAMIC CHIP 82PF	5% 50V	C724	1-135-177-21	TANTALUM CHIP 1uF	20% 20V
C659	1-162-952-11	CERAMIC CHIP 82PF	5% 50V	C725	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C666	1-162-966-11	CERAMIC CHIP 0.0022uF	10% 50V	C726	1-164-634-11	CERAMIC CHIP 1uF	16V
C667	1-162-950-11	CERAMIC CHIP 56PF	5% 50V	C727	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C668	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C728	1-164-634-11	CERAMIC CHIP 1uF	16V
C669	1-162-938-11	CERAMIC CHIP 7PF	0.5PF 50V	C729	1-164-634-11	CERAMIC CHIP 1uF	16V
C670	1-162-944-11	CERAMIC CHIP 18PF	5% 50V	C730	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C671	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C731	1-135-201-11	TANTALUM CHIP 10uF	20% 4V
C672	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C732	1-163-037-11	CERAMIC CHIP 0.022uF	10% 25V
C673	1-162-949-11	CERAMIC CHIP 47PF	5% 50V	C733	1-135-180-21	TANTALUM CHIP 3.3uF	20% 6.3V
C675	1-164-227-11	CERAMIC CHIP 0.022uF	10% 25V	C734	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C676	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C735	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C677	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C736	1-135-335-11	TANTAL. CHIP 100uF	20% 4V
C678	1-162-995-11	CERAMIC CHIP 0.022uF	50V	C737	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C679	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C738	1-164-245-11	CERAMIC CHIP 0.015uF	10% 25V
C680	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C741	1-164-361-11	CERAMIC CHIP 0.047uF	16V

MA-165

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C742	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C810	1-135-177-21	TANTALUM CHIP 1uF	20% 20V
C743	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C811	1-135-177-21	TANTALUM CHIP 1uF	20% 20V
C744	1-162-943-11	CERAMIC CHIP 15PF	5% 50V	C812	1-135-146-21	TANTALUM CHIP 0.68uF	20% 25V
C747	1-164-362-11	CERAMIC CHIP 470PF	5% 50V	C813	1-162-995-11	CERAMIC CHIP 0.022uF	50V
C750	1-135-201-11	TANTALUM CHIP 10uF	20% 4V	C816	1-162-945-11	CERAMIC CHIP 22PF	5% 50V
C751	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C817	1-162-941-11	CERAMIC CHIP 10PF	0.5PF 50V
C752	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C818	1-162-936-11	CERAMIC CHIP 5PF	0.25PF 50V
C753	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C819	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C754	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C820	1-162-949-11	CERAMIC CHIP 47PF	5% 50V
C756	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C821	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C757	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C822	1-162-945-11	CERAMIC CHIP 22PF	5% 50V
C758	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C823	1-162-957-11	CERAMIC CHIP 220PF	5% 50V
C760	1-135-180-21	TANTALUM CHIP 3.3uF	20% 6.3V	C824	1-162-951-11	CERAMIC CHIP 68PF	5% 50V
C761	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C826	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C762	1-135-180-21	TANTALUM CHIP 3.3uF	20% 6.3V	C827	1-162-950-11	CERAMIC CHIP 56PF	5% 50V
C763	1-164-360-11	CERAMIC CHIP 0.1uF	16V	C831	1-162-949-11	CERAMIC CHIP 47PF	5% 50V
C764	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C832	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C765	1-135-180-21	TANTALUM CHIP 3.3uF	20% 6.3V	C833	1-162-952-11	CERAMIC CHIP 82PF	5% 50V
C766	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C834	1-162-967-11	CERAMIC CHIP 0.0033uF	10% 50V
C767	1-162-954-11	CERAMIC CHIP 120PF	5% 50V	C835	1-162-953-11	CERAMIC CHIP 100PF	5% 50V
C768	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C836	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C769	1-164-634-11	CERAMIC CHIP 1uF	16V	C837	1-162-955-11	CERAMIC CHIP 150PF	5% 50V
C770	1-162-949-11	CERAMIC CHIP 47PF	5% 50V	C838	1-162-921-11	CERAMIC CHIP 33PF	5% 50V
C771	1-162-953-11	CERAMIC CHIP 100PF	5% 50V	C839	1-162-923-11	CERAMIC CHIP 47PF	5% 50V
C772	1-135-201-11	TANTALUM CHIP 10uF	20% 4V	C840	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C773	1-162-947-11	CERAMIC CHIP 33PF	5% 50V	C841	1-162-910-11	CERAMIC CHIP 5PF	0.25PF 50V
C775	1-162-947-11	CERAMIC CHIP 33PF	5% 50V	C842	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C776	1-162-950-11	CERAMIC CHIP 56PF	5% 50V	C844	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C777	1-162-953-11	CERAMIC CHIP 100PF	5% 50V	C845	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V
C778	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C846	1-164-383-11	CERAMIC CHIP 110PF	5% 50V
C779	1-162-948-11	CERAMIC CHIP 39PF	5% 50V	C847	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C780	1-162-944-11	CERAMIC CHIP 18PF	5% 50V	C848	1-135-149-21	TANTALUM CHIP 2.2uF	20% 10V
C781	1-135-201-11	TANTALUM CHIP 10uF	20% 4V	C849	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C782	1-135-201-11	TANTALUM CHIP 10uF	20% 4V	C850	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V
C783	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C851	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C784	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C852	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C786	1-164-634-11	CERAMIC CHIP 1uF	16V	C853	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C788	1-164-005-11	CERAMIC CHIP 0.47uF	25V	C854	1-135-177-21	TANTALUM CHIP 1uF	20% 20V
C789	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C855	1-162-927-11	CERAMIC CHIP 100PF	5% 50V
C792	1-135-201-11	TANTALUM CHIP 10uF	20% 4V	C856	1-162-974-11	CERAMIC CHIP 0.01uF	50V
C793	1-135-201-11	TANTALUM CHIP 10uF	20% 4V	C857	1-162-915-11	CERAMIC CHIP 10PF	0.5PF 50V
C794	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C859	1-162-922-11	CERAMIC CHIP 39PF	5% 50V
C795	1-162-955-11	CERAMIC CHIP 150PF	5% 50V	C860	1-162-922-11	CERAMIC CHIP 39PF	5% 50V
C797	1-135-201-11	TANTALUM CHIP 10uF	20% 4V	C873	1-164-005-11	CERAMIC CHIP 0.47uF	25V
C798	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C874	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
C803	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C875	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
C804	1-162-974-11	CERAMIC CHIP 0.01uF	50V	C876	1-162-928-11	CERAMIC CHIP 120PF	5% 50V
C805	1-135-259-11	TANTAL. CHIP 10uF	20% 6.3V	C877	1-164-413-91	CERAMIC CHIP 120PF	5% 50V
C808	1-135-181-21	TANTALUM CHIP 4.7uF	20% 6.3V	C878	1-164-360-11	CERAMIC CHIP 0.1uF	16V
C809	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V	C879	1-164-360-11	CERAMIC CHIP 0.1uF	16V

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C880	1-164-360-11	CERAMIC CHIP 0.1uF	16V	FB103	1-412-390-21	INDUCTOR CHIP 0uH	
C881	1-162-969-11	CERAMIC CHIP 0.0068uF 10%	25V	FB105	1-412-390-21	INDUCTOR CHIP 0uH	
C882	1-135-177-21	TANTALUM CHIP 1uF 20%	20V	FB201	1-412-390-21	INDUCTOR CHIP 0uH	
C888	1-162-959-11	CERAMIC CHIP 330PF 5%	50V				
C981	1-164-506-11	CERAMIC CHIP 4.7uF	16V	FB204	1-412-390-21	INDUCTOR CHIP 0uH	
				FB205	1-412-390-21	INDUCTOR CHIP 0uH	
C982	1-164-505-11	CERAMIC CHIP 2.2uF	16V	FB206	1-412-390-21	INDUCTOR CHIP 0uH	
C998	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V	FB301	1-412-390-21	INDUCTOR CHIP 0uH	
C1801	1-164-634-11	CERAMIC CHIP 1uF	16V	FB303	1-412-390-21	INDUCTOR CHIP 0uH	
C1802	1-164-634-11	CERAMIC CHIP 1uF	16V				
< FILTER >				< FILTER >			
CF801	1-579-371-11	FILTER, CERAMIC		FL701	1-236-848-21	FILTER, LOW PASS	
				FL702	1-239-055-21	FILTER, LOW PASS (CCD. PAL. Y)	
				FL801	1-239-349-21	FILTER, BAND PASS (CE. PAL.)	
				FL802	1-239-110-11	FILTER, BAND PASS	
				FL803	1-239-386-21	FILTER, BAND PASS (PAL. JOG)	
< CONNECTOR >				< IC >			
* CN002	1-580-055-21	PIN, CONNECTOR 2P		IC001	8-759-060-94	IC MB3785APFV-G-BND-ER	
CN003	1-573-303-21	CONNECTOR, BOARD TO BOARD 6P		IC091	8-759-509-13	IC XRU4052BF	
CN004	1-695-883-21	CONNECTOR, BOARD TO BOARD 32P		IC101	8-752-836-14	IC CXP80624A	
* CN005	1-560-890-00	PIN, CONNECTOR 2P		IC102	8-759-039-01	IC MPC1720M	
CN007	1-573-343-21	CONNECTOR, BOARD TO BOARD 30P		IC103	8-759-990-55	IC CXA8006M	
CN011	1-573-922-21	CONNECTOR, FFC/FPC (ZIF) 13P		IC201	8-759-158-53	IC MB89093	
CN012	1-573-353-21	CONNECTOR, FFC/FPC 13P		IC202	8-759-512-69	IC S-81350HG-KD	
CN013	1-691-495-21	CONNECTOR, FFC/FPC 16P		IC203	8-759-946-03	IC S-8054ALR-LN-S	
CN015	1-573-921-11	CONNECTOR, FFC/FPC (ZIF) 12P		IC204	8-759-044-78	IC AK6420F	
CN016	1-573-923-21	CONNECTOR, FFC/FPC (ZIF) 14P		IC205	8-759-999-02	IC TL1596CDB	
CN017	1-691-491-21	CONNECTOR, FFC/FPC 12P		IC206	8-759-635-27	IC M62352GP	
< DIODE >				IC301	8-759-512-42	IC CXA1481R	
D001	8-719-989-33	DIODE FC806		IC601	8-759-012-00	IC MC10H116M	
D002	8-719-989-03	DIODE DAN222		IC602	8-752-053-21	IC CXA1211M	
D004	8-719-991-00	DIODE DAP222		IC603	8-759-073-33	IC CXD-2107M	
D101	8-719-989-03	DIODE DAN222					
D199	8-719-422-91	DIODE MA8091		IC701	8-752-065-54	IC CXA1207AR	
				IC702	8-752-053-21	IC CXA1211M	
D301	8-719-989-00	DIODE DA221		IC703	8-759-636-33	IC CXA1452	
D310	8-719-989-03	DIODE DAN222		IC704	8-752-333-24	IC CXL1506M	
D601	8-719-951-22	DIODE 1MN10		IC705	8-759-635-27	IC M62352GP	
D602	8-719-989-03	DIODE DAN222					
D603	8-719-989-03	DIODE DAN222		IC707	8-759-710-86	IC NJM2233BM	
				IC801	8-752-065-56	IC CXA1208R	
D701	8-719-989-03	DIODE DAN222		IC802	8-752-062-36	IC CXA1203N	
D702	8-719-989-03	DIODE DAN222		IC804	8-759-038-46	IC SC7S00F	
D803	8-719-989-03	DIODE DAN222		IC805	8-759-509-17	IC XRU4053BF	
D804	8-719-989-03	DIODE DAN222					
D805	8-719-989-03	DIODE DAN222		< JACK >			
				J101	1-565-276-21	JACK, ULTRA SMALL 1P (REMOTE)	
D806	8-719-989-03	DIODE DAN222					
D1000	8-719-422-91	DIODE MA8091		< COIL >			
D1001	8-719-422-91	DIODE MA8091		L001	1-424-653-11	COIL, CHOKE 10uH	
D1002	8-719-989-03	DIODE DAN222		L002	1-424-674-11	COIL, CHOKE 22uH	
< FERRITE BEAD >				L003	1-412-028-11	INDUCTOR CHIP 4.7uH	
FB101	1-412-390-21	INDUCTOR CHIP 0uH		L004	1-412-027-11	INDUCTOR CHIP 2.2uH	
FB102	1-412-390-21	INDUCTOR CHIP 0uH					

MA-165

Ref. No.	Part No.	Description
L005	1-424-653-11	COIL, CHOKE 10uH
L006	1-412-032-11	INDUCTOR CHIP 100uH
L007	1-412-032-11	INDUCTOR CHIP 100uH
L008	1-412-032-11	INDUCTOR CHIP 100uH
L009	1-424-653-11	COIL, CHOKE 10uH
L010	1-424-674-11	COIL, CHOKE 22uH
L011	1-424-674-11	COIL, CHOKE 22uH
L101	1-412-031-11	INDUCTOR CHIP 47uH
L201	1-412-031-11	INDUCTOR CHIP 47uH
L301	1-412-029-11	INDUCTOR CHIP 10uH
L302	1-412-032-11	INDUCTOR CHIP 100uH
L303	1-412-280-31	INDUCTOR 330uH
L310	1-412-031-11	INDUCTOR CHIP 47uH
L603	1-412-280-31	INDUCTOR 330uH
L607	1-410-657-21	INDUCTOR CHIP 180uH
L614	1-410-378-11	INDUCTOR CHIP 5.6uH
L615	1-410-379-31	INDUCTOR CHIP 6.8uH
L616	1-410-375-11	INDUCTOR CHIP 3.3uH
L620	1-412-282-41	INDUCTOR 470uH
L621	1-410-656-11	INDUCTOR CHIP 150uH
L622	1-412-032-11	INDUCTOR CHIP 100uH
L623	1-410-385-11	INDUCTOR CHIP 22uH
L624	1-410-388-21	INDUCTOR CHIP 39uH
L626	1-412-029-11	INDUCTOR CHIP 10uH
L629	1-410-380-31	INDUCTOR CHIP 8.2uH
L630	1-412-280-31	INDUCTOR 330uH
L631	1-410-656-11	INDUCTOR CHIP 150uH
L632	1-410-658-31	INDUCTOR CHIP 220uH
L633	1-412-029-11	INDUCTOR CHIP 10uH
L634	1-412-029-11	INDUCTOR CHIP 10uH
L701	1-412-032-11	INDUCTOR CHIP 100uH
L702	1-412-029-11	INDUCTOR CHIP 10uH
L706	1-412-031-11	INDUCTOR CHIP 47uH
L713	1-410-392-11	INDUCTOR CHIP 82uH
L714	1-410-379-31	INDUCTOR CHIP 6.8uH
L716	1-410-388-21	INDUCTOR CHIP 39uH
L717	1-410-390-11	INDUCTOR CHIP 56uH
L718	1-410-390-11	INDUCTOR CHIP 56uH
L719	1-410-385-11	INDUCTOR CHIP 22uH
L720	1-410-384-31	INDUCTOR CHIP 18uH
L721	1-412-031-11	INDUCTOR CHIP 47uH
L722	1-412-956-21	INDUCTOR 27uH
L802	1-410-386-11	INDUCTOR CHIP 27uH
L803	1-410-393-11	INDUCTOR CHIP 100uH
L804	1-410-379-31	INDUCTOR CHIP 6.8uH
L805	1-410-655-31	INDUCTOR CHIP 120uH
L806	1-410-393-11	INDUCTOR CHIP 100uH
L808	1-410-393-11	INDUCTOR CHIP 100uH
L809	1-410-656-11	INDUCTOR CHIP 150uH
L810	1-412-031-11	INDUCTOR CHIP 47uH

Remark	Ref. No.	Part No.	Description	Remark
	L812	1-412-029-11	INDUCTOR CHIP 10uH	
	L813	1-410-381-11	INDUCTOR CHIP 10uH	
	L814	1-410-389-31	INDUCTOR CHIP 47uH	
	L815	1-410-381-11	INDUCTOR CHIP 10uH	
	L906	1-412-028-11	INDUCTOR CHIP 4.7uH	
	L907	1-412-028-11	INDUCTOR CHIP 4.7uH	
	L1000	1-412-026-11	INDUCTOR CHIP 1uH	
	L1100	1-414-037-11	INDUCTOR 10uH	
	< LINK, IC >			
	△PS001	1-533-284-11	LINK, IC (1.6A)	
	△PS002	1-533-284-11	LINK, IC (1.6A)	
	△PS003	1-533-284-11	LINK, IC (1.6A)	
	△PS004	1-533-284-11	LINK, IC (1.6A)	
	△PS005	1-533-284-11	LINK, IC (1.6A)	
	△PS101	1-576-123-21	LINK, IC CCP2E20 (0.8A)	
	△PS201	1-576-122-21	LINK, IC CCP2E10 (0.4A)	
	< TRANSISTOR >			
	△Q001	8-729-823-84	TRANSISTOR FP102	
	△Q002	8-729-823-84	TRANSISTOR FP102	
	△Q003	8-729-823-84	TRANSISTOR FP102	
	△Q004	8-729-805-25	TRANSISTOR 2SB1121-2	
	Q005	8-729-927-XX	TRANSISTOR 2SC4617R	
	△Q006	8-752-822-52	TRANSISTOR 2SK1469	
	Q007	8-729-928-81	TRANSISTOR DTC144EE	
	△Q008	8-752-822-52	TRANSISTOR 2SK1469	
	Q009	8-729-928-81	TRANSISTOR DTC144EE	
	Q010	8-729-928-36	TRANSISTOR DTA144EE	
	Q012	8-729-928-81	TRANSISTOR DTC144EE	
	Q091	8-729-927-XX	TRANSISTOR 2SC4617R	
	Q092	8-729-927-XX	TRANSISTOR 2SC4617R	
	Q093	8-729-927-XX	TRANSISTOR 2SC4617R	
	Q101	8-729-420-12	TRANSISTOR XN4213	
	Q103	8-729-820-46	TRANSISTOR 2SB1202FAS	
	Q202	8-729-927-XX	TRANSISTOR 2SC4617R	
	Q203	8-729-928-81	TRANSISTOR DTC144EE	
	Q301	8-729-930-10	TRANSISTOR UMH1	
	Q310	8-729-927-XX	TRANSISTOR 2SC4617R	
	Q311	8-729-927-65	TRANSISTOR UMT1	
	Q312	8-729-928-90	TRANSISTOR DTC114EE	
	Q313	8-729-823-95	TRANSISTOR FC149	
	Q609	8-729-927-XX	TRANSISTOR 2SC4617R	
	Q611	8-729-927-XX	TRANSISTOR 2SC4617R	
	Q613	8-729-927-XX	TRANSISTOR 2SC4617R	
	Q616	8-729-927-XX	TRANSISTOR 2SC4617R	
	Q617	8-729-928-81	TRANSISTOR DTC144EE	
	Q618	8-729-927-XX	TRANSISTOR 2SC4617R	
	Q619	8-729-928-72	TRANSISTOR DTA114TE	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
Q621	8-729-928-72	TRANSISTOR	DTA114TE	Q811	8-729-927-XX	TRANSISTOR	2SC4617R
Q622	8-729-927-XX	TRANSISTOR	2SC4617R	Q812	8-729-927-XX	TRANSISTOR	2SC4617R
Q623	8-729-927-XX	TRANSISTOR	2SC4617R	Q813	8-729-927-XX	TRANSISTOR	2SC4617R
Q625	8-729-928-72	TRANSISTOR	DTA114TE	Q814	8-729-927-XX	TRANSISTOR	2SC4617R
Q626	8-729-927-XX	TRANSISTOR	2SC4617R	Q815	8-729-928-81	TRANSISTOR	DTC144EE
Q627	8-729-927-XX	TRANSISTOR	2SC4617R	Q816	8-729-928-27	TRANSISTOR	DTA144EE
Q628	8-729-928-19	TRANSISTOR	2SA1774R	Q817	8-729-930-00	TRANSISTOR	UMH2
Q629	8-729-928-19	TRANSISTOR	2SA1774R	Q818	8-729-930-13	TRANSISTOR	UMH2
Q630	8-729-927-XX	TRANSISTOR	2SC4617R	Q819	8-729-928-81	TRANSISTOR	DTC144EE
Q631	8-729-927-XX	TRANSISTOR	2SC4617R	Q820	8-729-928-81	TRANSISTOR	DTC144EE
Q632	8-729-927-XX	TRANSISTOR	2SC4617R	Q821	8-729-928-81	TRANSISTOR	DTC144EE
Q633	8-729-927-XX	TRANSISTOR	2SC4617R	Q822	8-729-928-81	TRANSISTOR	DTC144EE
Q634	8-729-928-81	TRANSISTOR	DTC144EE	Q823	8-729-928-81	TRANSISTOR	DTC144EE
Q701	8-729-928-81	TRANSISTOR	DTC144EE	Q824	8-729-928-81	TRANSISTOR	DTC144EE
Q702	8-729-202-38	TRANSISTOR	2SC3326N-A	Q825	8-729-927-XX	TRANSISTOR	2SC4617R
Q703	8-729-202-38	TRANSISTOR	2SC3326N-A	Q826	8-729-928-81	TRANSISTOR	DTC144EE
Q705	8-729-928-81	TRANSISTOR	DTC144EE	Q827	8-729-928-81	TRANSISTOR	DTC144EE
Q706	8-729-928-27	TRANSISTOR	DTA144EE	Q828	8-729-928-27	TRANSISTOR	DTA144EE
Q707	8-729-928-81	TRANSISTOR	DTC144EE	Q829	8-729-928-81	TRANSISTOR	DTC144EE
Q708	8-729-928-81	TRANSISTOR	DTC144EE	Q1601	8-729-928-19	TRANSISTOR	2SA1774R
Q712	8-729-928-19	TRANSISTOR	2SA1774R	Q1602	8-729-928-81	TRANSISTOR	DTC144EE
Q713	8-729-927-XX	TRANSISTOR	2SC4617R	Q1603	8-729-928-19	TRANSISTOR	2SA1774R
Q714	8-729-927-XX	TRANSISTOR	2SC4617R	Q1604	8-729-930-13	TRANSISTOR	UMH2
Q715	8-729-928-19	TRANSISTOR	2SA1774R	Q1605	8-729-928-81	TRANSISTOR	DTC144EE
Q716	8-729-927-XX	TRANSISTOR	2SC4617R	Q1801	8-729-927-XX	TRANSISTOR	2SC4617R
Q717	8-729-927-XX	TRANSISTOR	2SC4617R	Q1802	8-729-927-XX	TRANSISTOR	2SC4617R
Q719	8-729-927-XX	TRANSISTOR	2SC4617R	Q1803	8-729-928-27	TRANSISTOR	DTA144EE
Q720	8-729-927-XX	TRANSISTOR	2SC4617R	(RESISTOR)			
Q721	8-729-927-XX	TRANSISTOR	2SC4617R	R001	1-216-845-11	METAL CHIP	100K 5% 1/16W
Q722	8-729-927-XX	TRANSISTOR	2SC4617R	R003	1-216-864-11	METAL CHIP	0 5% 1/16W
Q724	8-729-928-19	TRANSISTOR	2SA1774R	R004	1-216-832-11	METAL CHIP	8.2K 5% 1/16W
Q725	8-729-928-81	TRANSISTOR	DTC144EE	R005	1-218-345-11	METAL CHIP	9.1K 0.50% 1/16W
Q730	8-729-928-81	TRANSISTOR	DTC144EE	R006	1-218-714-11	METAL CHIP	8.2K 0.50% 1/16W
Q732	8-729-927-XX	TRANSISTOR	2SC4617R	R007	1-216-836-11	METAL CHIP	18K 5% 1/16W
Q755	8-729-927-XX	TRANSISTOR	2SC4617R	R008	1-216-845-11	METAL CHIP	100K 5% 1/16W
Q760	8-729-927-XX	TRANSISTOR	2SC4617R	R009	1-216-847-11	METAL CHIP	150K 5% 1/16W
Q761	8-729-927-XX	TRANSISTOR	2SC4617R	R011	1-216-864-11	METAL CHIP	0 5% 1/16W
Q765	8-729-927-XX	TRANSISTOR	2SC4617R	R012	1-216-834-11	METAL CHIP	12K 5% 1/16W
Q766	8-729-928-19	TRANSISTOR	2SA1774R	R013	1-218-738-11	METAL CHIP	82K 0.50% 1/16W
Q768	8-729-905-35	TRANSISTOR	2SC4081-R	R014	1-216-795-11	METAL CHIP	6.8K 0.50% 1/16W
Q801	8-729-927-XX	TRANSISTOR	2SC4617R	R015	1-216-795-11	METAL CHIP	6.8K 0.50% 1/16W
Q802	8-729-928-81	TRANSISTOR	DTC144EE	R016	1-216-795-11	METAL CHIP	6.8K 0.50% 1/16W
Q803	8-729-928-81	TRANSISTOR	DTC144EE	R017	1-216-845-11	METAL CHIP	100K 5% 1/16W
Q804	8-729-927-XX	TRANSISTOR	2SC4617R	R018	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q805	8-729-928-19	TRANSISTOR	2SA1774R	R019	1-216-843-11	METAL CHIP	68K 5% 1/16W
Q806	8-729-927-XX	TRANSISTOR	2SC4617R	R020	1-216-838-11	METAL CHIP	27K 5% 1/16W
Q807	8-729-930-13	TRANSISTOR	UMH2	R021	1-218-295-11	METAL CHIP	5.6K 0.50% 1/16W
Q808	8-729-928-81	TRANSISTOR	DTC144EE	R023	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
Q809	8-729-928-81	TRANSISTOR	DTC144EE	R024	1-216-823-11	METAL CHIP	1.5K 5% 1/16W
Q810	8-729-102-07	TRANSISTOR	2SC2223-F13				

MA-165

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R025	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R130	1-216-833-11	METAL CHIP	10K	5%	1/16W
R027	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	R131	1-216-845-11	METAL CHIP	100K	5%	1/16W
R028	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W	R132	1-216-841-11	METAL CHIP	47K	5%	1/16W
R029	1-216-831-11	METAL CHIP	6. 8K	5%	1/16W	R133	1-216-841-11	METAL CHIP	47K	5%	1/16W
R030	1-216-033-00	METAL CHIP	220	5%	1/10W	R134	1-216-841-11	METAL CHIP	47K	5%	1/16W
R031	1-216-033-00	METAL CHIP	220	5%	1/10W	R135	1-216-845-11	METAL CHIP	100K	5%	1/16W
R032	1-216-037-00	METAL CHIP	330	5%	1/10W	R137	1-216-821-11	METAL CHIP	1K	5%	1/16W
R033	1-216-021-00	METAL CHIP	68	5%	1/10W	R153	1-216-864-11	METAL CHIP	0	5%	1/16W
R034	1-216-009-00	METAL CHIP	22	5%	1/10W	R193	1-216-833-11	METAL CHIP	10K	5%	1/16W
R035	1-216-789-11	METAL CHIP	2. 2	5%	1/16W	R194	1-216-864-11	METAL CHIP	0	5%	1/16W
R036	1-216-295-00	METAL CHIP	0	5%	1/10W	R195	1-216-845-11	METAL CHIP	100K	5%	1/16W
R037	1-216-295-00	METAL CHIP	0	5%	1/10W	R196	1-218-348-11	METAL CHIP	110K	5%	1/16W
R038	1-216-864-11	METAL CHIP	0	5%	1/16W	R197	1-216-833-11	METAL CHIP	10K	5%	1/16W
R040	1-216-849-11	METAL CHIP	220K	5%	1/16W	R199	1-216-833-11	METAL CHIP	10K	5%	1/16W
R041	1-216-849-11	METAL CHIP	220K	5%	1/16W	R201	1-216-833-11	METAL CHIP	10K	5%	1/16W
R048	1-216-830-11	METAL CHIP	5. 6K	5%	1/16W	R202	1-216-295-00	METAL CHIP	0	5%	1/10W
R049	1-216-845-11	METAL CHIP	100K	5%	1/16W	R203	1-216-821-11	METAL CHIP	1K	5%	1/16W
R081	1-216-025-00	METAL CHIP	100	5%	1/10W	R204	1-216-821-11	METAL CHIP	1K	5%	1/16W
R082	1-216-025-00	METAL CHIP	100	5%	1/10W	R205	1-216-845-11	METAL CHIP	100K	5%	1/16W
R093	1-216-834-11	METAL CHIP	12K	5%	1/16W	R206	1-216-833-11	METAL CHIP	10K	5%	1/16W
R094	1-216-837-11	METAL CHIP	22K	5%	1/16W	R208	1-216-833-11	METAL CHIP	10K	5%	1/16W
R095	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R209	1-216-815-11	METAL CHIP	330	5%	1/16W
R096	1-216-851-11	METAL CHIP	330K	5%	1/16W	R210	1-216-833-11	METAL CHIP	10K	5%	1/16W
R097	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R211	1-216-845-11	METAL CHIP	100K	5%	1/16W
R098	1-216-851-11	METAL CHIP	330K	5%	1/16W	R212	1-216-821-11	METAL CHIP	1K	5%	1/16W
R102	1-216-833-11	METAL CHIP	10K	5%	1/16W	R213	1-216-815-11	METAL CHIP	330	5%	1/16W
R103	1-216-853-11	METAL CHIP	470K	5%	1/16W	R214	1-216-821-11	METAL CHIP	1K	5%	1/16W
R104	1-216-833-11	METAL CHIP	10K	5%	1/16W	R215	1-216-845-11	METAL CHIP	100K	5%	1/16W
R105	1-216-821-11	METAL CHIP	1K	5%	1/16W	R217	1-216-833-11	METAL CHIP	10K	5%	1/16W
R106	1-216-821-11	METAL CHIP	1K	5%	1/16W	R220	1-216-821-11	METAL CHIP	1K	5%	1/16W
R107	1-216-821-11	METAL CHIP	1K	5%	1/16W	R221	1-216-821-11	METAL CHIP	1K	5%	1/16W
R108	1-216-837-11	METAL CHIP	22K	5%	1/16W	R222	1-216-295-00	METAL CHIP	0	5%	1/10W
R109	1-216-845-11	METAL CHIP	100K	5%	1/16W	R223	1-216-833-11	METAL CHIP	10K	5%	1/16W
R110	1-216-833-11	METAL CHIP	10K	5%	1/16W	R224	1-216-821-11	METAL CHIP	1K	5%	1/16W
R111	1-216-821-11	METAL CHIP	1K	5%	1/16W	R225	1-216-821-11	METAL CHIP	1K	5%	1/16W
R112	1-216-295-00	METAL CHIP	0	5%	1/10W	R226	1-216-295-00	METAL CHIP	0	5%	1/10W
R113	1-216-295-00	METAL CHIP	0	5%	1/10W	R227	1-216-833-11	METAL CHIP	10K	5%	1/16W
R114	1-216-851-11	METAL CHIP	330K	5%	1/16W	R228	1-216-833-11	METAL CHIP	10K	5%	1/16W
R115	1-216-851-11	METAL CHIP	330K	5%	1/16W	R231	1-216-295-00	METAL CHIP	0	5%	1/10W
R116	1-216-821-11	METAL CHIP	1K	5%	1/16W	R232	1-216-833-11	METAL CHIP	10K	5%	1/16W
R117	1-216-833-11	METAL CHIP	10K	5%	1/16W	R233	1-216-821-11	METAL CHIP	1K	5%	1/16W
R121	1-216-864-11	METAL CHIP	0	5%	1/16W	R234	1-216-295-00	METAL CHIP	0	5%	1/10W
R122	1-216-821-11	METAL CHIP	1K	5%	1/16W	R235	1-216-851-11	METAL CHIP	330K	5%	1/16W
R123	1-216-833-11	METAL CHIP	10K	5%	1/16W	R236	1-216-821-11	METAL CHIP	1K	5%	1/16W
R124	1-216-845-11	METAL CHIP	100K	5%	1/16W	R237	1-216-821-11	METAL CHIP	1K	5%	1/16W
R125	1-216-845-11	METAL CHIP	100K	5%	1/16W	R240	1-216-833-11	METAL CHIP	10K	5%	1/16W
R126	1-216-821-11	METAL CHIP	1K	5%	1/16W	R241	1-216-833-11	METAL CHIP	10K	5%	1/16W
R127	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	R242	1-216-833-11	METAL CHIP	10K	5%	1/16W
R128	1-216-295-00	METAL CHIP	0	5%	1/10W	R244	1-216-841-11	METAL CHIP	47K	5%	1/16W
R129	1-216-821-11	METAL CHIP	1K	5%	1/16W	R272	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R273	1-216-809-11	METAL CHIP	100 5% 1/16W	R360	1-216-174-00	METAL CHIP	100 5% 1/8W
R274	1-216-837-11	METAL CHIP	22K 5% 1/16W	R362	1-216-841-11	METAL CHIP	47K 5% 1/16W
R275	1-216-837-11	METAL CHIP	22K 5% 1/16W	R363	1-216-851-11	METAL CHIP	330K 5% 1/16W
R283	1-216-833-11	METAL CHIP	10K 5% 1/16W	R364	1-216-845-11	METAL CHIP	100K 5% 1/16W
R284	1-216-821-11	METAL CHIP	1K 5% 1/16W	R365	1-216-841-11	METAL CHIP	47K 5% 1/16W
R285	1-216-843-11	METAL CHIP	68K 5% 1/16W	R367	1-216-833-11	METAL CHIP	10K 5% 1/16W
R286	1-216-851-11	METAL CHIP	330K 5% 1/16W	R368	1-216-833-11	METAL CHIP	10K 5% 1/16W
R299	1-216-845-11	METAL CHIP	100K 5% 1/16W	R369	1-216-295-00	METAL CHIP	0 5% 1/10W
R301	1-216-817-11	METAL CHIP	470 5% 1/16W	R373	1-216-841-11	METAL CHIP	47K 5% 1/16W
R302	1-216-817-11	METAL CHIP	470 5% 1/16W	R374	1-216-833-11	METAL CHIP	10K 5% 1/16W
R303	1-216-837-11	METAL CHIP	22K 5% 1/16W	R381	1-216-864-11	METAL CHIP	0 5% 1/16W
R304	1-216-845-11	METAL CHIP	100K 5% 1/16W	R398	1-216-864-11	METAL CHIP	0 5% 1/16W
R305	1-216-833-11	METAL CHIP	10K 5% 1/16W	R592	1-216-821-11	METAL CHIP	1K 5% 1/16W
R306	1-216-295-00	METAL CHIP	0 5% 1/10W	R593	1-216-821-11	METAL CHIP	1K 5% 1/16W
R307	1-216-295-00	METAL CHIP	0 5% 1/10W	R602	1-216-833-11	METAL CHIP	10K 5% 1/16W
R308	1-216-295-00	METAL CHIP	0 5% 1/10W	R603	1-216-833-11	METAL CHIP	10K 5% 1/16W
R309	1-216-845-11	METAL CHIP	100K 5% 1/16W	R606	1-216-817-11	METAL CHIP	470 5% 1/16W
R310	1-216-841-11	METAL CHIP	47K 5% 1/16W	R607	1-216-817-11	METAL CHIP	470 5% 1/16W
R311	1-216-836-11	METAL CHIP	18K 5% 1/16W	R612	1-216-817-11	METAL CHIP	470 5% 1/16W
R312	1-216-841-11	METAL CHIP	47K 5% 1/16W	R613	1-216-817-11	METAL CHIP	470 5% 1/16W
R313	1-216-849-11	METAL CHIP	220K 5% 1/16W	R614	1-216-809-11	METAL CHIP	100 5% 1/16W
R314	1-216-830-11	METAL CHIP	5. 6K 5% 1/16W	R615	1-216-817-11	METAL CHIP	470 5% 1/16W
R315	1-216-833-11	METAL CHIP	10K 5% 1/16W	R616	1-216-821-11	METAL CHIP	1K 5% 1/16W
R316	1-216-838-11	METAL CHIP	27K 5% 1/16W	R617	1-216-817-11	METAL CHIP	470 5% 1/16W
R317	1-216-844-11	METAL CHIP	82K 5% 1/16W	R618	1-216-821-11	METAL CHIP	1K 5% 1/16W
R319	1-216-857-11	METAL CHIP	1M 5% 1/16W	R619	1-216-817-11	METAL CHIP	470 5% 1/16W
R322	1-216-819-11	METAL CHIP	680 5% 1/16W	R620	1-216-817-11	METAL CHIP	470 5% 1/16W
R323	1-216-829-11	METAL CHIP	4. 7K 5% 1/16W	R621	1-216-821-11	METAL CHIP	1K 5% 1/16W
R324	1-216-833-11	METAL CHIP	10K 5% 1/16W	R622	1-216-817-11	METAL CHIP	470 5% 1/16W
R330	1-216-843-11	METAL CHIP	68K 5% 1/16W	R623	1-216-818-11	METAL CHIP	560 5% 1/16W
R331	1-216-841-11	METAL CHIP	47K 5% 1/16W	R624	1-216-812-11	METAL CHIP	180 5% 1/16W
R333	1-216-845-11	METAL CHIP	100K 5% 1/16W	R626	1-216-817-11	METAL CHIP	470 5% 1/16W
R334	1-216-827-11	METAL CHIP	3. 3K 5% 1/16W	R627	1-216-817-11	METAL CHIP	470 5% 1/16W
R336	1-216-037-00	METAL CHIP	330 5% 1/10W	R628	1-216-837-11	METAL CHIP	22K 5% 1/16W
R337	1-217-671-11	METAL CHIP	1 5% 1/10W	R629	1-216-837-11	METAL CHIP	22K 5% 1/16W
R338	1-217-671-11	METAL CHIP	1 5% 1/10W	R630	1-216-864-11	METAL CHIP	0 5% 1/16W
R339	1-217-671-11	METAL CHIP	1 5% 1/10W	R634	1-216-839-11	METAL CHIP	33K 5% 1/16W
R340	1-217-671-11	METAL CHIP	1 5% 1/10W	R635	1-216-818-11	METAL CHIP	560 5% 1/16W
R341	1-216-827-11	METAL CHIP	3. 3K 5% 1/16W	R636	1-216-834-11	METAL CHIP	12K 5% 1/16W
R342	1-216-829-11	METAL CHIP	4. 7K 5% 1/16W	R637	1-216-815-11	METAL CHIP	330 5% 1/16W
R343	1-216-825-11	METAL CHIP	2. 2K 5% 1/16W	R639	1-216-821-11	METAL CHIP	1K 5% 1/16W
R344	1-216-838-11	METAL CHIP	27K 5% 1/16W	R640	1-216-864-11	METAL CHIP	0 5% 1/16W
R345	1-216-833-11	METAL CHIP	10K 5% 1/16W	R642	1-216-818-11	METAL CHIP	560 5% 1/16W
R346	1-216-838-11	METAL CHIP	27K 5% 1/16W	R643	1-216-819-11	METAL CHIP	680 5% 1/16W
R347	1-216-838-11	METAL CHIP	27K 5% 1/16W	R644	1-216-811-11	METAL CHIP	150 5% 1/16W
R348	1-216-838-11	METAL CHIP	27K 5% 1/16W	R646	1-216-864-11	METAL CHIP	0 5% 1/16W
R349	1-216-833-11	METAL CHIP	10K 5% 1/16W	R647	1-216-837-11	METAL CHIP	22K 5% 1/16W
R354	1-216-864-11	METAL CHIP	0 5% 1/16W	R650	1-216-841-11	METAL CHIP	47K 5% 1/16W
R356	1-216-833-11	METAL CHIP	10K 5% 1/16W	R651	1-216-813-11	METAL CHIP	220 5% 1/16W
R357	1-216-837-11	METAL CHIP	22K 5% 1/16W	R654	1-216-810-11	METAL CHIP	120 5% 1/16W

MA-165

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R655	1-216-841-11	METAL CHIP	47K	5%	1/16W	R720	1-216-818-11	METAL CHIP	560	5%	1/16W
R656	1-216-837-11	METAL CHIP	22K	5%	1/16W	R721	1-216-015-00	METAL CHIP	39	5%	1/10W
R657	1-216-833-11	METAL CHIP	10K	5%	1/16W	R722	1-216-821-11	METAL CHIP	1K	5%	1/16W
R658	1-216-837-11	METAL CHIP	22K	5%	1/16W	R723	1-216-821-11	METAL CHIP	1K	5%	1/16W
R660	1-216-841-11	METAL CHIP	47K	5%	1/16W	R724	1-216-837-11	METAL CHIP	22K	5%	1/16W
R661	1-216-864-11	METAL CHIP	0	5%	1/16W	R725	1-216-833-11	METAL CHIP	10K	5%	1/16W
R662	1-216-820-11	METAL CHIP	820	5%	1/16W	R726	1-216-857-11	METAL CHIP	1M	5%	1/16W
R664	1-216-817-11	METAL CHIP	470	5%	1/16W	R729	1-216-013-00	METAL CHIP	33	5%	1/10W
R665	1-216-833-11	METAL CHIP	10K	5%	1/16W	R730	1-216-864-11	METAL CHIP	0	5%	1/16W
R667	1-216-821-11	METAL CHIP	1K	5%	1/16W	R731	1-216-845-11	METAL CHIP	100K	5%	1/16W
R668	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W	R732	1-216-841-11	METAL CHIP	47K	5%	1/16W
R669	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R733	1-216-821-11	METAL CHIP	1K	5%	1/16W
R671	1-216-834-11	METAL CHIP	12K	5%	1/16W	R734	1-216-821-11	METAL CHIP	1K	5%	1/16W
R672	1-216-835-11	METAL CHIP	15K	5%	1/16W	R735	1-216-845-11	METAL CHIP	100K	5%	1/16W
R673	1-216-833-11	METAL CHIP	10K	5%	1/16W	R737	1-216-853-11	METAL CHIP	470K	5%	1/16W
R674	1-216-813-11	METAL CHIP	220	5%	1/16W	R738	1-216-861-11	METAL CHIP	2. 2M	5%	1/16W
R675	1-216-833-11	METAL CHIP	10K	5%	1/16W	R739	1-216-863-11	METAL CHIP	3. 3M	5%	1/16W
R676	1-216-814-11	METAL CHIP	270	5%	1/16W	R740	1-216-833-11	METAL CHIP	10K	5%	1/16W
R677	1-216-809-11	METAL CHIP	100	5%	1/16W	R741	1-216-817-11	METAL CHIP	470	5%	1/16W
R678	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R742	1-216-833-11	METAL CHIP	10K	5%	1/16W
R679	1-216-864-11	METAL CHIP	0	5%	1/16W	R743	1-216-811-11	METAL CHIP	150	5%	1/16W
R680	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R744	1-216-804-11	METAL CHIP	39	5%	1/16W
R682	1-216-635-11	METAL CHIP	15K	5%	1/16W	R745	1-216-820-11	METAL CHIP	820	5%	1/16W
R683	1-216-834-11	METAL CHIP	12K	5%	1/16W	R746	1-216-817-11	METAL CHIP	470	5%	1/16W
R685	1-216-819-11	METAL CHIP	680	5%	1/16W	R747	1-216-819-11	METAL CHIP	680	5%	1/16W
R686	1-216-819-11	METAL CHIP	680	5%	1/16W	R752	1-216-864-11	METAL CHIP	0	5%	1/16W
R687	1-216-819-11	METAL CHIP	680	5%	1/16W	R753	1-216-807-11	METAL CHIP	68	5%	1/16W
R688	1-216-821-11	METAL CHIP	1K	5%	1/16W	R754	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W
R689	1-216-819-11	METAL CHIP	680	5%	1/16W	R755	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R690	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R756	1-216-821-11	METAL CHIP	1K	5%	1/16W
R691	1-216-816-11	METAL CHIP	390	5%	1/16W	R757	1-216-821-11	METAL CHIP	1K	5%	1/16W
R692	1-216-816-11	METAL CHIP	390	5%	1/16W	R758	1-216-810-11	METAL CHIP	120	5%	1/16W
R693	1-216-819-11	METAL CHIP	680	5%	1/16W	R759	1-216-844-11	METAL CHIP	82K	5%	1/16W
R694	1-216-833-11	METAL CHIP	10K	5%	1/16W	R760	1-216-864-11	METAL CHIP	0	5%	1/16W
R702	1-216-821-11	METAL CHIP	1K	5%	1/16W	R764	1-216-857-11	METAL CHIP	1M	5%	1/16W
R703	1-216-821-11	METAL CHIP	1K	5%	1/16W	R765	1-216-839-11	METAL CHIP	33K	5%	1/16W
R704	1-216-837-11	METAL CHIP	22K	5%	1/16W	R766	1-216-842-11	METAL CHIP	56K	5%	1/16W
R705	1-216-835-11	METAL CHIP	15K	5%	1/16W	R767	1-216-817-11	METAL CHIP	470	5%	1/16W
R706	1-216-824-11	METAL CHIP	1. 8K	5%	1/16W	R768	1-216-821-11	METAL CHIP	1K	5%	1/16W
R708	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R769	1-216-821-11	METAL CHIP	1K	5%	1/16W
R709	1-216-826-11	METAL CHIP	2. 7K	5%	1/16W	R770	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R710	1-216-841-11	METAL CHIP	47K	5%	1/16W	R771	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R711	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W	R772	1-216-821-11	METAL CHIP	1K	5%	1/16W
R712	1-216-817-11	METAL CHIP	470	5%	1/16W	R773	1-216-821-11	METAL CHIP	1K	5%	1/16W
R714	1-216-816-11	METAL CHIP	390	5%	1/16W	R774	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R715	1-216-841-11	METAL CHIP	47K	5%	1/16W	R775	1-216-839-11	METAL CHIP	33K	5%	1/16W
R716	1-216-841-11	METAL CHIP	47K	5%	1/16W	R776	1-216-842-11	METAL CHIP	56K	5%	1/16W
R717	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	R777	1-216-817-11	METAL CHIP	470	5%	1/16W
R718	1-216-864-11	METAL CHIP	0	5%	1/16W	R778	1-216-821-11	METAL CHIP	1K	5%	1/16W
R719	1-216-817-11	METAL CHIP	470	5%	1/16W	R779	1-216-817-11	METAL CHIP	470	5%	1/16W

Ref. No.	Part No.	Description	Remark			Ref. No.	Part No.	Description	Remark		
R780	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R837	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R781	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R838	1-216-833-11	METAL CHIP	10K	5%	1/16W
R782	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R839	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W
R784	1-216-864-11	METAL CHIP	0	5%	1/16W	R840	1-216-844-11	METAL CHIP	82K	5%	1/16W
R785	1-216-833-11	METAL CHIP	10K	5%	1/16W	R841	1-216-835-11	METAL CHIP	15K	5%	1/16W
R786	1-216-814-11	METAL CHIP	270	5%	1/16W	R843	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W
R787	1-216-820-11	METAL CHIP	820	5%	1/16W	R844	1-216-821-11	METAL CHIP	1K	5%	1/16W
R788	1-216-820-11	METAL CHIP	820	5%	1/16W	R845	1-216-821-11	METAL CHIP	1K	5%	1/16W
R789	1-216-864-11	METAL CHIP	0	5%	1/16W	R846	1-216-839-11	METAL CHIP	33K	5%	1/16W
R790	1-216-820-11	METAL CHIP	820	5%	1/16W	R847	1-216-835-11	METAL CHIP	15K	5%	1/16W
R791	1-216-817-11	METAL CHIP	470	5%	1/16W	R848	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W
R792	1-216-820-11	METAL CHIP	820	5%	1/16W	R849	1-216-817-11	METAL CHIP	470	5%	1/16W
R793	1-216-828-11	METAL CHIP	3. 9K	5%	1/16W	R850	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W
R796	1-216-817-11	METAL CHIP	470	5%	1/16W	R851	1-216-814-11	METAL CHIP	270	5%	1/16W
R797	1-216-811-11	METAL CHIP	150	5%	1/16W	R852	1-216-820-11	METAL CHIP	820	5%	1/16W
R798	1-216-809-11	METAL CHIP	100	5%	1/16W	R853	1-216-833-11	METAL CHIP	10K	5%	1/16W
R799	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W	R854	1-216-832-11	METAL CHIP	8. 2K	5%	1/16W
R801	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W	R855	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W
R802	1-216-845-11	METAL CHIP	100K	5%	1/16W	R856	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W
R803	1-216-821-11	METAL CHIP	1K	5%	1/16W	R857	1-218-740-11	METAL CHIP	100K	0. 50%	1/16W
R804	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R858	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W
R805	1-216-845-11	METAL CHIP	100K	5%	1/16W	R859	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W
R806	1-216-832-11	METAL CHIP	8. 2K	5%	1/16W	R860	1-216-845-11	METAL CHIP	100K	5%	1/16W
R807	1-216-830-11	METAL CHIP	5. 6K	5%	1/16W	R861	1-216-833-11	METAL CHIP	10K	5%	1/16W
R808	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R862	1-216-821-11	METAL CHIP	1K	5%	1/16W
R809	1-216-830-11	METAL CHIP	5. 6K	5%	1/16W	R863	1-216-821-11	METAL CHIP	1K	5%	1/16W
R810	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R864	1-216-845-11	METAL CHIP	100K	5%	1/16W
R811	1-216-830-11	METAL CHIP	5. 6K	5%	1/16W	R865	1-216-845-11	METAL CHIP	100K	5%	1/16W
R814	1-216-838-11	METAL CHIP	27K	5%	1/16W	R866	1-216-845-11	METAL CHIP	100K	5%	1/16W
R815	1-216-834-11	METAL CHIP	12K	5%	1/16W	R867	1-216-841-11	METAL CHIP	47K	5%	1/16W
R816	1-216-817-11	METAL CHIP	470	5%	1/16W	R869	1-216-833-11	METAL CHIP	10K	5%	1/16W
R817	1-216-837-11	METAL CHIP	22K	5%	1/16W	R871	1-216-864-11	METAL CHIP	0	5%	1/16W
R818	1-216-834-11	METAL CHIP	12K	5%	1/16W	R874	1-216-833-11	METAL CHIP	10K	5%	1/16W
R819	1-216-816-11	METAL CHIP	390	5%	1/16W	R875	1-216-864-11	METAL CHIP	0	5%	1/16W
R820	1-216-833-11	METAL CHIP	10K	5%	1/16W	R876	1-216-833-11	METAL CHIP	10K	5%	1/16W
R821	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W	R877	1-216-857-11	METAL CHIP	1M	5%	1/16W
R822	1-216-864-11	METAL CHIP	0	5%	1/16W	R879	1-216-864-11	METAL CHIP	0	5%	1/16W
R823	1-216-822-11	METAL CHIP	1. 2K	5%	1/16W	R881	1-216-821-11	METAL CHIP	1K	5%	1/16W
R824	1-216-821-11	METAL CHIP	1K	5%	1/16W	R882	1-216-821-11	METAL CHIP	1K	5%	1/16W
R825	1-216-821-11	METAL CHIP	1K	5%	1/16W	R883	1-216-821-11	METAL CHIP	1K	5%	1/16W
R826	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R888	1-216-827-11	METAL CHIP	3. 3K	5%	1/16W
R828	1-216-825-11	METAL CHIP	2. 2K	5%	1/16W	R890	1-216-833-11	METAL CHIP	10K	5%	1/16W
R829	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W	R893	1-216-823-11	METAL CHIP	1. 5K	5%	1/16W
R830	1-216-818-11	METAL CHIP	560	5%	1/16W	R894	1-216-819-11	METAL CHIP	680	5%	1/16W
R831	1-216-833-11	METAL CHIP	10K	5%	1/16W	R899	1-216-833-11	METAL CHIP	10K	5%	1/16W
R832	1-216-821-11	METAL CHIP	1K	5%	1/16W	R1602	1-216-841-11	METAL CHIP	47K	5%	1/16W
R833	1-216-864-11	METAL CHIP	0	5%	1/16W	R1603	1-216-829-11	METAL CHIP	4. 7K	5%	1/16W
R834	1-216-864-11	METAL CHIP	0	5%	1/16W	R1604	1-216-833-11	METAL CHIP	10K	5%	1/16W
R835	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1605	1-216-833-11	METAL CHIP	10K	5%	1/16W
R836	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1606	1-216-841-11	METAL CHIP	47K	5%	1/16W

MA-165

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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-7071-697-A	PE-13 BOARD, COMPLETE *****		C929	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
		< CAPACITOR >		C931	1-162-947-11	CERAMIC CHIP 33PF 5% 50V	
C201	1-162-974-11	CERAMIC CHIP 0.01uF 50V		C932	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C202	1-162-974-11	CERAMIC CHIP 0.01uF 50V		C933	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C203	1-162-974-11	CERAMIC CHIP 0.01uF 50V		C937	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C204	1-162-974-11	CERAMIC CHIP 0.01uF 50V		C941	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
		< CONNECTOR >		C942	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
CN201	1-573-346-21	CONNECTOR, FFC/FPC 6P		C943	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
		< RESISTOR >		C947	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
R201	1-216-827-11	METAL CHIP 3.3K 5% 1/16W		C951	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
		< SWITCH >		C952	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
S201	1-572-921-11	SWITCH, KEY BOARD (EJECT)		C953	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
S202	1-572-921-11	SWITCH, KEY BOARD (POWER)		C954	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
S203	1-572-921-11	SWITCH, KEY BOARD (COUNTER RESET)		C955	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
S204	1-572-921-11	SWITCH, KEY BOARD (DATA SCREEN)		C956	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
S206	1-692-280-11	SWITCH, PUSH (1 KEY) (LCD ON SW)		C958	1-135-192-11	TANTALUM CHIP 0.47MF 20% 20V	
		*****		C959	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
*	A-7053-393-A	RG-26 BOARD, COMPLETE *****		C961	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
		< CAPACITOR >		C962	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C901	1-162-974-11	CERAMIC CHIP 0.01uF 50V		C967	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C902	1-164-360-11	CERAMIC CHIP 0.1uF 16V		C969	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C903	1-126-206-11	ELECT CHIP 100uF 20% 6.3V		C970	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C904	1-164-360-11	CERAMIC CHIP 0.1uF 16V		C975	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C905	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V		C976	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C906	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V		C978	1-164-346-11	CERAMIC CHIP 1uF 16V	
C907	1-162-922-11	CERAMIC CHIP 39PF 5% 50V		C979	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C908	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V		C980	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C909	1-164-360-11	CERAMIC CHIP 0.1uF 16V		C983	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C910	1-128-065-11	ELECT CHIP 68uF 20% 10V		C984	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C911	1-162-920-11	CERAMIC CHIP 27PF 5% 50V		C985	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C912	1-162-922-11	CERAMIC CHIP 39PF 5% 50V		C986	1-135-070-00	TANTALUM CHIP 0.1uF 10% 35V	
C913	1-162-920-11	CERAMIC CHIP 27PF 5% 50V		C988	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C914	1-162-922-11	CERAMIC CHIP 39PF 5% 50V		C989	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C915	1-162-920-11	CERAMIC CHIP 27PF 5% 50V		C990	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C916	1-162-922-11	CERAMIC CHIP 39PF 5% 50V		C991	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C917	1-135-091-00	TANTALUM CHIP 1uF 20% 16V		C992	1-135-215-21	TANTAL. CHIP 6.8uF 20% 16V	
C918	1-135-192-21	TANTAL. CHIP 0.47uF 20% 20V		C993	1-164-473-11	CERAMIC CHIP 820PF 10% 50V	
C919	1-162-974-11	CERAMIC CHIP 0.01uF 50V		C994	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C921	1-135-091-00	TANTALUM CHIP 1uF 20% 16V		C995	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C924	1-164-360-11	CERAMIC CHIP 0.1uF 16V		C996	1-162-924-11	CERAMIC CHIP 56PF 5% 50V	
C926	1-164-360-11	CERAMIC CHIP 0.1uF 16V		C997	1-164-343-11	CERAMIC CHIP 0.056uF 10% 25V	
C927	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V				< CONNECTOR >	
				CN901	1-573-315-21	CONNECTOR, BOARD TO BOARD 30P	
						< CAP, TRIMMER >	
				CV901	1-141-311-11	CAP, TRIMMER 20PF	

RG-26

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
< DIODE >				R907	1-216-843-11	METAL CHIP	68K 5% 1/16W
D901	8-719-989-03	DIODE DAN222		R908	1-216-824-11	METAL CHIP	1.8K 5% 1/16W
D902	8-719-938-67	LED GL-3EG8		R909	1-216-845-11	METAL CHIP	100K 5% 1/16W
D903	8-719-989-03	DIODE DAN222		R914	1-216-821-11	METAL CHIP	1K 5% 1/16W
D904	8-719-991-00	DIODE DAP222		R915	1-216-821-11	METAL CHIP	1K 5% 1/16W
< DELAY LINE >				R916	1-216-821-11	METAL CHIP	1K 5% 1/16W
DL950	1-415-649-11	DELAY LINE, 1H (ULTRASONIC)		R918	1-216-853-11	METAL CHIP	470K 5% 1/16W
< IC >				R920	1-216-821-11	METAL CHIP	1K 5% 1/16W
IC901	8-752-058-96	IC CXA1585Q		R922	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
IC902	8-752-057-28	IC CXA1485Q		R923	1-216-856-11	METAL CHIP	820K 5% 1/16W
IC903	8-759-084-06	IC μ PD6453GT-622-E2		R927	1-216-837-11	METAL CHIP	22K 5% 1/16W
IC904	8-759-234-13	IC TC4S30F		R929	1-216-857-11	METAL CHIP	1M 5% 1/16W
IC905	8-759-209-69	IC TC4S11F		R930	1-216-841-11	METAL CHIP	47K 5% 1/16W
IC906	8-759-635-27	IC M62352GP		R931	1-216-841-11	METAL CHIP	47K 5% 1/16W
IC907	8-759-234-13	IC TC4S30F		R932	1-216-841-11	METAL CHIP	47K 5% 1/16W
IC908	8-759-209-97	IC TC4S81F		R933	1-216-817-11	METAL CHIP	470 5% 1/16W
< COIL >				R934	1-216-833-11	METAL CHIP	10K 5% 1/16W
L901	1-412-029-11	INDUCTOR CHIP 10 μ H		R941	1-216-845-11	METAL CHIP	100K 5% 1/16W
L902	1-412-032-11	INDUCTOR CHIP 100 μ H		R942	1-216-839-11	METAL CHIP	33K 5% 1/16W
L903	1-412-958-21	INDUCTOR 39 μ H		R943	1-216-841-11	METAL CHIP	47K 5% 1/16W
L904	1-412-958-21	INDUCTOR 39 μ H		R944	1-216-841-11	METAL CHIP	47K 5% 1/16W
L905	1-412-958-21	INDUCTOR 39 μ H		R945	1-216-841-11	METAL CHIP	47K 5% 1/16W
L908	1-410-377-31	INDUCTOR CHIP 4.7 μ H		R946	1-216-821-11	METAL CHIP	1K 5% 1/16W
L950	1-412-059-21	INDUCTOR CHIP 15 μ H		R947	1-216-817-11	METAL CHIP	470 5% 1/16W
L951	1-412-059-21	INDUCTOR CHIP 15 μ H		R950	1-216-837-11	METAL CHIP	22K 5% 1/16W
L960	1-412-198-11	INDUCTOR 220 μ H		R951	1-216-837-11	METAL CHIP	22K 5% 1/16W
L961	1-412-143-11	INDUCTOR 39 μ H		R952	1-216-821-11	METAL CHIP	1K 5% 1/16W
< TRANSISTOR >				R953	1-216-818-11	METAL CHIP	560 5% 1/16W
Q904	8-729-928-81	TRANSISTOR DTC144EE		R954	1-216-839-11	METAL CHIP	33K 5% 1/16W
Q905	8-729-928-81	TRANSISTOR DTC144EE		R955	1-216-839-11	METAL CHIP	33K 5% 1/16W
Q906	8-729-928-19	TRANSISTOR 2SA1774R		R957	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
Q910	8-729-928-19	TRANSISTOR 2SA1774R		R958	1-216-845-11	METAL CHIP	100K 5% 1/16W
Q911	8-729-928-81	TRANSISTOR DTC144EE		R959	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q912	8-729-928-27	TRANSISTOR DTA144EE		R960	1-216-821-11	METAL CHIP	1K 5% 1/16W
Q914	8-729-928-94	TRANSISTOR DTC144WE		R961	1-216-864-11	METAL CHIP	0 5% 1/16W
Q916	8-729-927-XX	TRANSISTOR 2SC4617R		R962	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q918	8-729-928-27	TRANSISTOR DTA144EE		R963	1-216-833-11	METAL CHIP	10K 5% 1/16W
Q920	8-729-928-81	TRANSISTOR DTC144EE		R964	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
Q921	8-729-928-27	TRANSISTOR DTA144EE		R967	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
Q950	8-729-927-XX	TRANSISTOR 2SC4617R		R968	1-216-814-11	METAL CHIP	270 5% 1/16W
Q951	8-729-927-XX	TRANSISTOR 2SC4617R		R970	1-216-818-11	METAL CHIP	560 5% 1/16W
Q952	8-729-927-XX	TRANSISTOR 2SC4617R		R971	1-216-833-11	METAL CHIP	10K 5% 1/16W
< RESISTOR >				R972	1-216-835-11	METAL CHIP	15K 5% 1/16W
R904	1-216-027-00	METAL CHIP 120 5% 1/10W		R973	1-216-840-11	METAL CHIP	39K 5% 1/16W
R906	1-216-839-11	METAL CHIP 33K 5% 1/16W		R974	1-216-834-11	METAL CHIP	12K 5% 1/16W
				R975	1-216-821-11	METAL CHIP	1K 5% 1/16W
				R976	1-216-833-11	METAL CHIP	10K 5% 1/16W
				R977	1-216-864-11	METAL CHIP	0 5% 1/16W
				R978	1-216-864-11	METAL CHIP	0 5% 1/16W
				R982	1-218-725-11	METAL CHIP	24K 0.50% 1/16W

Ref. No.	Part No.	Description	Remark
R986	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R988	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R990	1-216-856-11	METAL CHIP 820K 5% 1/16W	
R991	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R993	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R995	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R996	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R998	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R999	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
< NETWORK, RES >			
RB960	1-236-412-11	NETWORK, RES 1.0K	
RB961	1-236-412-11	NETWORK, RES 1.0K	
RB962	1-236-412-11	NETWORK, RES 1.0K	
RB963	1-236-412-11	NETWORK, RES 1.0K	
< VARIABLE RESISTOR >			
RV902	1-241-474-21	RES, ADJ, CERMET 470	
RV903	1-241-474-21	RES, ADJ, CERMET 470	
RV904	1-241-483-11	RES, ADJ, CERMET 470K	
< COIL >			
T901	1-402-765-21	COIL	
< VIBRATOR >			
X901	1-579-661-21	OSCILLATOR, CRYSTAL (4.43MHz)	

*	A-7063-390-A	RP-152 BOARD, COMPLETE	

< CAPACITOR >			
C1001	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C1002	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C1003	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C1004	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1005	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C1006	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C1007	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1008	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C1009	1-164-361-11	CERAMIC CHIP 0.047uF 16V	
C1010	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1011	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1012	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1013	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C1014	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C1015	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C1016	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	
C1017	1-164-633-11	CERAMIC CHIP 0.1uF 10% 25V	

Ref. No.	Part No.	Description	Remark
C1018	1-164-005-11	CERAMIC CHIP 0.47uF 25V	
C1019	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C1020	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1021	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C1023	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C1024	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1025	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1041	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C1042	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C1043	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C1044	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C1045	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C1046	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C1047	1-162-955-11	CERAMIC CHIP 150PF 5% 50V	
< CONNECTOR >			
CN052	1-691-490-21	CONNECTOR, FFC/FPC 11P	
CN053	1-573-768-21	PIN, CONNECTOR (1.5MM) (SMD) 5P	
< IC >			
IC1001	8-752-033-38	IC CXA1202R	
< COIL >			
L1001	1-412-029-11	INDUCTOR CHIP 10uH	
L1002	1-412-033-11	INDUCTOR CHIP 220uH	
L1003	1-412-033-11	INDUCTOR CHIP 220uH	
L1041	1-412-198-11	INDUCTOR 220uH	
L1042	1-412-137-11	INDUCTOR 10uH	
< TRANSISTOR >			
Q1001	8-729-928-27	TRANSISTOR DTA144EE	
Q1004	8-729-928-81	TRANSISTOR DTC144EE	
Q1041	8-729-928-19	TRANSISTOR 2SA1774R	
Q1042	8-729-820-76	TRANSISTOR 2SA1179-M5M6	
< RESISTOR >			
R1001	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R1002	1-216-819-11	METAL CHIP 680 5% 1/16W	
R1003	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1004	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R1006	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R1007	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R1008	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R1009	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R1010	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R1011	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R1012	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R1013	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R1014	1-216-791-11	METAL CHIP 3.3 5% 1/16W	
R1015	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	

RP-152**SL-26****VR-39**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R1016	1-216-837-11	METAL CHIP 22K 5% 1/16W		R104	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R1018	1-216-837-11	METAL CHIP 22K 5% 1/16W		R106	1-216-150-00	METAL CHIP 10 5% 1/8W	
R1019	1-216-841-11	METAL CHIP 47K 5% 1/16W		R107	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R1020	1-216-825-11	METAL CHIP 2.2K 5% 1/16W		R108	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1021	1-216-823-11	METAL CHIP 1.5K 5% 1/16W		R111	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1022	1-216-827-11	METAL CHIP 3.3K 5% 1/16W		R112	1-216-864-11	METAL CHIP 0 5% 1/16W	
				R113	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1023	1-216-809-11	METAL CHIP 100 5% 1/16W		R114	1-216-864-11	METAL CHIP 0 5% 1/16W	
R1024	1-216-809-11	METAL CHIP 100 5% 1/16W				(FLEXIBLE BOARD)	
R1029	1-216-833-11	METAL CHIP 10K 5% 1/16W		W101	1-645-363-11	FP-562 FLEXIBLE BOARD	
R1041	1-216-840-11	METAL CHIP 39K 5% 1/16W		W102	1-642-186-11	FP-437 FLEXIBLE BOARD	
R1042	1-216-839-11	METAL CHIP 33K 5% 1/16W				*****	
R1043	1-216-810-11	METAL CHIP 120 5% 1/16W		*	A-7071-700-A	VR-39 BOARD, COMPLETE	
R1044	1-216-815-11	METAL CHIP 330 5% 1/16W				*****	
R1045	1-216-794-11	METAL CHIP 5.6 5% 1/16W				(CAPACITOR)	
R1046	1-216-821-11	METAL CHIP 1K 5% 1/16W		C501	1-126-395-11	ELECT 22uF 20% 16V	
		(FLEXIBLE BOARD)		C502	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
W051	1-645-994-11	FP-628 FLEXIBLE BOARD				(CONNECTOR)	
		*****		CN501	1-580-056-21	PIN, CONNECTOR 3P	
*	A-7063-329-A	SL-26 BOARD, COMPLETE		CN502	1-573-923-21	CONNECTOR, FFC/FPC (ZIF) 14P	
		*****		CN503	1-573-921-11	CONNECTOR, FFC/FPC (ZIF) 12P	
		(CAPACITOR)				(COIL)	
C101	1-128-004-11	ELECT CHIP 10uF 20% 16V		L501	1-412-028-11	INDUCTOR CHIP 4.7uH	
C102	1-128-004-11	ELECT CHIP 10uF 20% 16V				(RESISTOR)	
C103	1-128-013-11	ELECT CHIP 1uF 20% 50V		R501	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
C104	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V		R502	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
C105	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V		R503	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
C106	1-162-974-11	CERAMIC CHIP 0.01uF 50V		R504	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
C107	1-164-330-21	CERAMIC CHIP 0.22uF 10% 16V		R505	1-216-833-11	METAL CHIP 10K 5% 1/16W	
C108	1-164-330-21	CERAMIC CHIP 0.22uF 10% 16V				(SWITCH)	
C109	1-164-330-21	CERAMIC CHIP 0.22uF 10% 16V		S501	1-572-473-11	SWITCH, TACTIL (VOL +)	
		(CONNECTOR)		S502	1-572-473-11	SWITCH, TACTIL (VOL -)	
CN101	1-691-482-21	CONNECTOR, FFC/FPC 15P		S503	1-572-473-11	SWITCH, TACTIL (BRT +)	
CN102	1-691-472-21	CONNECTOR, FFC/FPC 6P		S504	1-572-473-11	SWITCH, TACTIL (BRT -)	
CN103	1-691-473-21	CONNECTOR, FFC/FPC 7P		S505	1-572-473-11	SWITCH, TACTIL (MENU)	
		(IC)		S506	1-572-473-11	SWITCH, TACTIL (ENTER)	
IC101	8-759-059-09	IC LB8111V				(FLEXIBLE BOARD)	
		(TRANSISTOR)		W501	1-645-365-11	FP-564 FLEXIBLE BOARD	
Q101	8-729-902-93	TRANSISTOR FMG4				*****	
		(RESISTOR)				*****	
R101	1-216-845-11	METAL CHIP 100K 5% 1/16W					
R102	1-216-845-11	METAL CHIP 100K 5% 1/16W					
R103	1-216-833-11	METAL CHIP 10K 5% 1/16W					

Ref. No.	Part No.	Description	Remark
MISCELLANEOUS *****			
62	1-645-364-11	FP-563 FLEXIBLE BOARD	
63	1-645-368-11	FP-568 FLEXIBLE BOARD	
△69	1-466-791-11	INVERTER UNIT, DC/AC (DPS-28)	
70	1-645-369-11	FP-621 FLEXIBLE BOARD	
101	1-645-995-11	FP-629 FLEXIBLE BOARD	
110	1-645-367-11	FP-566 FLEXIBLE BOARD	
112	1-645-366-11	FP-565 FLEXIBLE BOARD	
117	1-691-471-11	CONNECTOR, TRANSLATION 11P	
251	A-7049-587-A	DRUM ASSY, UPPER (DGR-0A1-R)	
BL901	1-517-126-11	FLUORESENT TUBE, HEAT CATHODE	
J401	1-569-556-11	JACK (AUDIO/VIDEO)	
J901	1-537-449-11	TERMINAL BOARD (TUNER/CAMERA)	
J902	1-537-420-21	TERMINAL BOARD (BATTERY)	
J903	1-580-009-21	SOCKET, CONNECTOR (SQUARE)12P(A/V OUT)	
LCD901	1-809-500-11	MODULE, COLOR LIQUID CRYSTAL	
M901	A-7048-648-A	DRUM ASSY (DGH-0A1A-R)	
M902	8-835-477-01	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S002	1-572-987-11	SWITCH, PUSH (3 KEY) (REC PROOF, ME/MP, MP/MP-HG)	
S005	1-570-771-21	SWITCH (C DOWN)	
SP901	1-504-137-11	SPEAKER (3.6CM)	

ACCESSORIES & PACKING MATERIALS *****			
	3-316-688-01	BAG, PROTECTION	
	3-755-611-11	MANUAL, INSTRUCTION (ENGLISH)	
	3-755-611-41	MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH) (AEP)	
	3-755-611-51	MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN) (AEP)	
*	3-949-392-21	INDIVIDUAL CARTON	
*	3-949-394-01	CUSHION, ACC	
*	3-949-398-01	CUSHION (LOWER)	
	8-953-314-95	HEADPHONE MDR-E757/BK SET	

HARDWARE LIST *****			
#1	7-624-102-04	STOP RING 1.5, TYPE -E	
#2	7-627-853-57	PRECISION SCREW +P2X5	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

SECTION 7 MECHANICAL SECTION ADJUSTMENTS

Mechanism Section Adjustments

For details of adjustments and checks of the mechanism section, and the replacement of mechanism parts, refer to the separate volume "8 mm Video MECHANISM ADJUSTMENT Manual IV [A MECHANISM]" (9-973-199-11).

Refer to the following for how to set the track shift mode.

7-1. SETTING OF TRACK SHIFT MODE

- 1) Refer to "2. DISASSEMBLY", and supply the power with the cabinet section removed. (So that the mechanism deck section can be operated.)
- 2) Connect the adjusting remote commander, and turn on the HOLD switch.
- 3) Select page: 1, address: 00, and set data: 01.
(Releasing the protect.)
- 4) Select page: D, address: 01, and set data: 03.
(Setting the track shift mode.)
- 5) Press the PAUSE button of the adjusting remote commander.
- 6) Turn off the HOLD switch of the adjusting remote commander. (The adjusting remote commander can be removed after this.)
- 7) After completing all operations, be sure to perform "7-3. Processing After Operations".

7-2. PREPARATIONS FOR ADJUSTMENTS

- 1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
- 2) Connect the oscilloscope.
CH1: Pin ② of CN053 on RP-152 board (V RF OUT)
CH2: Pin ③ of CN053 on RP-152 board (RF SW P)
- 3) Play back the alignment tape for adjusting tracking (WRS-1CP: 8-967-995-05).
- 4) Check that the RF waveform of the oscilloscope is flat at the entrance and exit. (Refer to Figs. 7-1, 7-2.)
If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment IV (A Mechanism).
- 5) After adjusting, perform "7-3. Processing After Operations".

7-3. Processing After Operations

- 1) Connect the adjusting remote commander, and turn on the HOLD switch.
- 2) Select page: 1, address: 00, and set data: 01.
- 3) Select page: D, address: 01, and set data: 00.
- 4) Press the PAUSE button of the adjusting remote commander.
- 5) Disconnect the power supply of the unit.

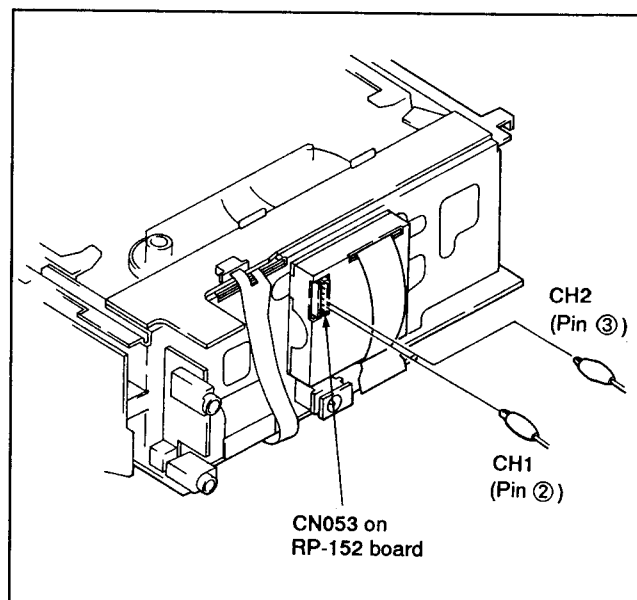


Fig.7-1.

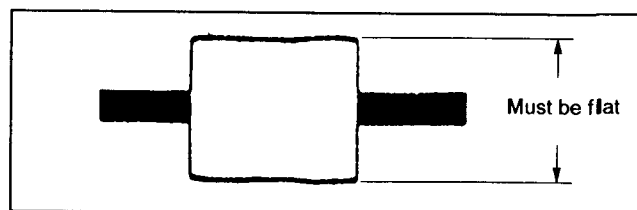


Fig.7-2.

SECTION 8

ELECTRICAL ADJUSTMENTS

When adjusting, refer to the layout diagrams for adjustment related parts beginning from page 184.

8-1. PREPARATIONS BEFORE ADJUSTMENTS

Use the following measuring equipments for adjusting the video section.

8-1-1. Equipments Used

- 1) TV Monitor
- 2) Oscilloscope 2 phenomena, band 30 MHz or wider, with delay mode (Use 10:1 probe unless specified otherwise.)
- 3) Frequency counter
- 4) Pattern generator with video output terminal
- 5) Digital voltmeter
- 6) Audio generator
- 7) Audio level meter
- 8) Audio distortion meter
- 9) Audio attenuator
- 10) Regulated power supply
- 11) Alignment tape

For adjusting tracking (WR5-1CP)

Part code: 8-967-995-07

For adjusting video frequency characteristics (WR5-7CE)

Part code: 8-967-995-18

For checking operations

(WR5-4CL)^{Note 1}

Part code: 8-967-995-56

(WR5-5CSP)^{Note 2}

Part code: 8-967-995-47

(WR5-8CSE)

Part code: 8-967-995-48

For checking AFM stereo operations (WR5-9CS)

Part code: 8-967-995-28

Note: 1) The WR5-3CL (8-967-995-36) alignment tape can be used instead.

2) The WR5-4CSP (8-967-995-46) alignment tape can be used instead.

- 12) Adjusting remote commander (J-6082-053-A)

Note: If the micro processor IC in the adjusting remote commander is not the new model (μ PD7503G-C56-12), pages cannot be switched. Therefore, replace with the new one (8-759-148-35).

8-1-2. Connecting the Equipments

Connect the measuring equipments as shown in Fig. 8-1 and adjust, unless specified otherwise.

- Connect the adjusting remote commander to the remote control terminal (J101 on MA-165 board).

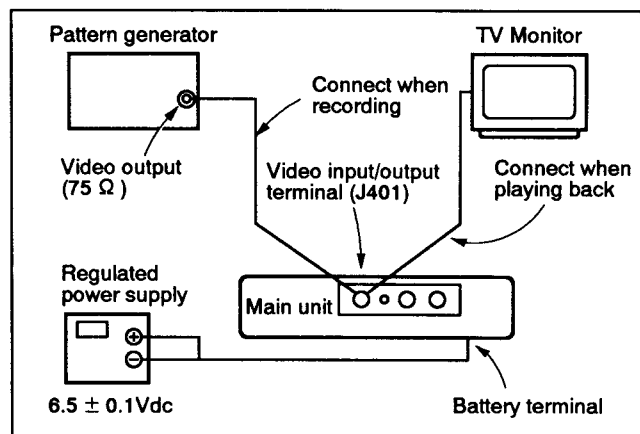


Fig. 8-1.

8-1-3. Precautions Upon Adjustments

- 1) The LCD unit is not required except in the "LCD system adjustment". Remove it when not required.

8-1-4. Setup During Adjustment

As the video signal obtained from the pattern generator is used as the adjusting signal for adjusting the VTR section, this video output signal must be within the given specifications.

Connect the oscilloscope to the video input/output terminal, on the AU-147 board, and check that the amplitude of the sync signal of the video signal is approximately 0.3V, the amplitude of the video section is approximately 0.7V, the amplitude of the burst signal is approximately 0.3V and flat, and that the level ratio of the burst signal and the [red] signal is 0.30: 0.66.

The video signal (color bar) used for electric adjustments of the VTR section is shown in Fig. 8-2.

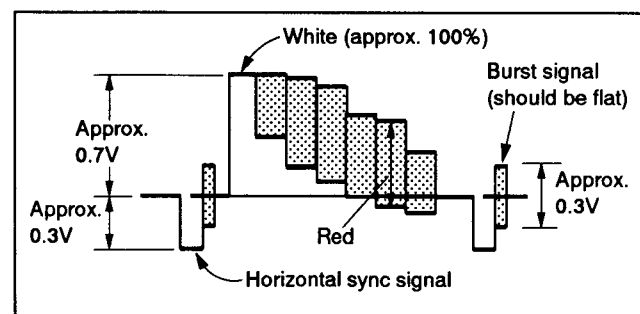


Fig. 8-2. Color bar signal of pattern generator

8-1-5. Alignment Tape

The following table lists available alignment tapes.

Use the tape type specified in the signal column for each adjustment.

If the tape type is not specified for adjustments using tapes to check operations, use whichever tape for checking operations.

Name	Recording Mode	Tape Type	Tape Speed	Recording Contents		Uses
				Video Area	PCM Area	
Tracking WR5-1CP	L	MP	SP	CH2: 1 MHz tape path adjusting signal		Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7CE	E	ME	LP	RF sweep 0 to 15 MHz Marker 2, 4.5, 7, 8.5, 10 MHz		Adjusting frequency characteristics
Checking operations (SP mode) WR5-5CSP	L	MP	SP	- Video signal Color bar 4 minutes Monoscope 4 minutes - Audio signal (AFM) 400 Hz 60% modulation	- Audio signal (PCM) Monoscope section 20Hz, 20 sec. 400Hz, 20 sec. 14kHz, 20 sec. - Color bar section 1 kHz, 4 minutes	Checking operations
Checking operations (LP mode) WR5-4CL	L	MP	LP	- Video signal Color bar 4 minutes Monoscope 4 minutes - Audio signal (AFM) 400 Hz 60% modulation		
Checking operations (Hi8 SP mode) WR5-8CSE	E	ME	SP	- Video signal Color bar 4 minutes Monoscope 4 minutes - Audio signal (AFM) 400 Hz 60% modulation	Audio signal (PCM) 400 Hz	
Checking AFM stereo operations WR5-9CS	L	MP	SP	- Video signal Color bar 4 minutes Monoscope 4 minutes - Audio signal (AFM) Stereo section (Color bar) Lch: 400 Hz, Rch: 1 kHz $\left(\begin{array}{l} \text{L+R:} \\ 1.5 \text{ MHz} \pm 60 \text{ kHz DEV} \\ \text{L-R:} \\ 1.7 \text{ MHz} \pm 30 \text{ kHz DEV} \end{array} \right)$ - Bilingual section (Monoscope) MAIN: 400 Hz (1.5 MHz $\pm$ 60 kHz DEV) SUB: 1 kHz (1.7 MHz $\pm$ 30 kHz DEV)	Audio signal (PCM) 400 Hz, 8 minutes	Checking AFM stereo operations

Note: Recording mode

L Conventional mode

E Hi8 (Hi-band) mode

Tape types

MP Metal particle tape

ME Metal evaporated tape

Table 8-1.

Fig. 8-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video input/output terminal (Terminated at 75 Ω)

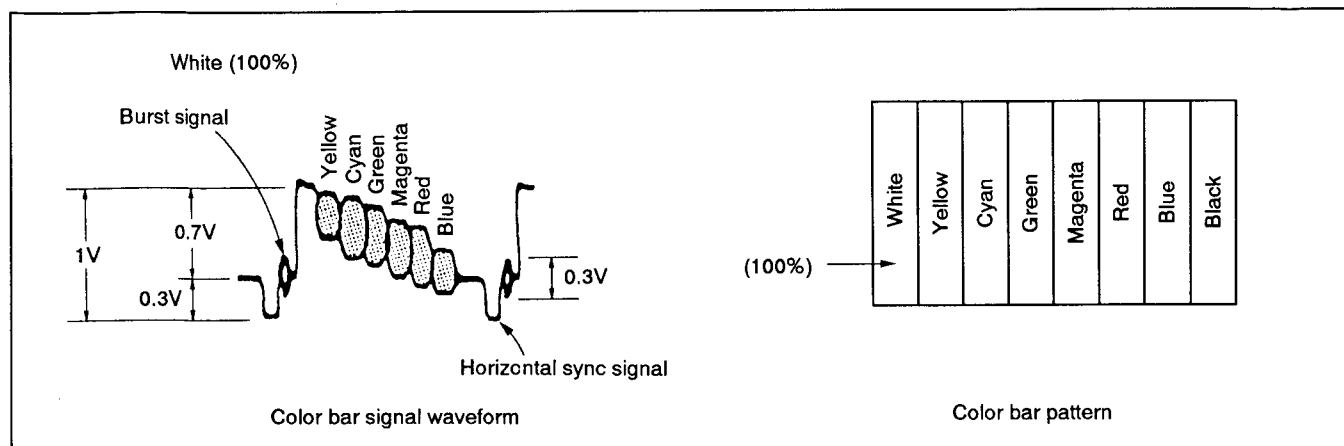


Fig. 8-3. Alignment tape color bar signal

8-1-6. Input/Output Level and Impedance

Video input	Pin jack Input signal: 1 Vp-p, 75 Ω unbalanced, sync negative
Video output	Pin jack Output signal: 1 Vp-p, 75 Ω unbalanced, sync negative
Audio input	Pin jack Input level: -7.5 dBs (0 dBs=0.775 Vrms) Input impedance: Above 47 k Ω
Audio output	Pin jack Standard output: -7.5 dBs Output impedance: Below 10 k Ω

8-1-7. Service Mode

1. Service Mode Setting

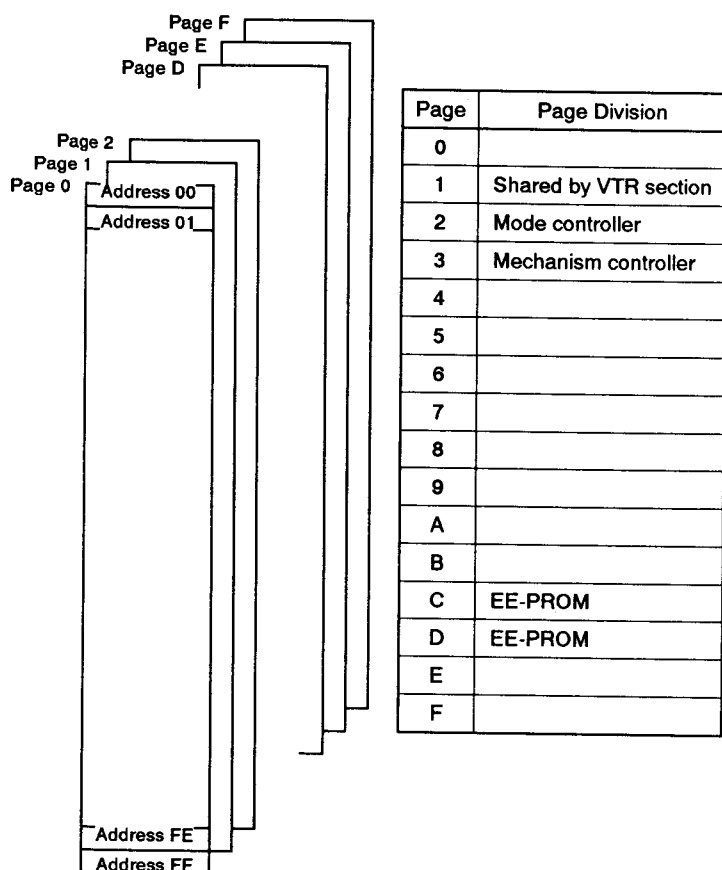
The service mode consists of the adjusting mode which adjusts the EVR and the test mode which displays the condition of the unit.

The unit can be set into the test mode and adjusting mode by connecting the adjusting remote commander (Set the HOLD switch to "HOLD").

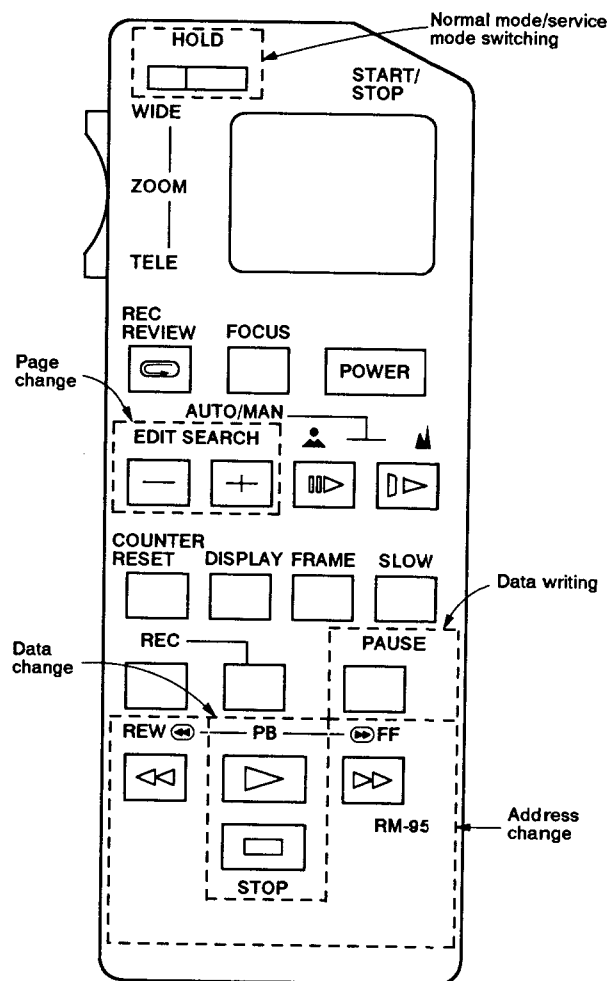
LCD Display of the Adjusting Remote Controller

0:00:00
 Page Data Address

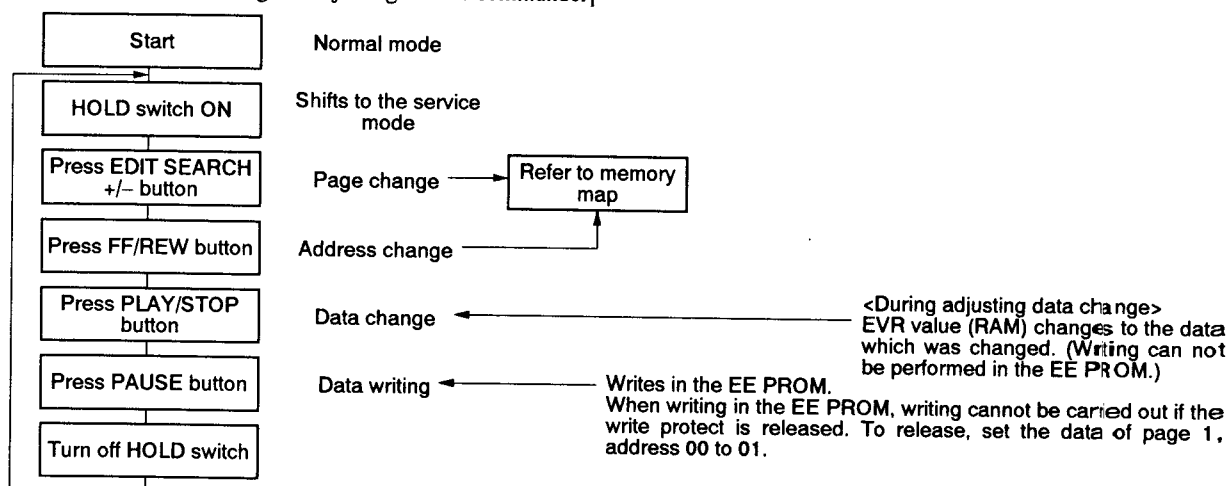
(1) Service LANC memory map



Adjusting remote commander RM-95 (J-6082-053-A)



[Shifting to the service mode using the adjusting remote commander]

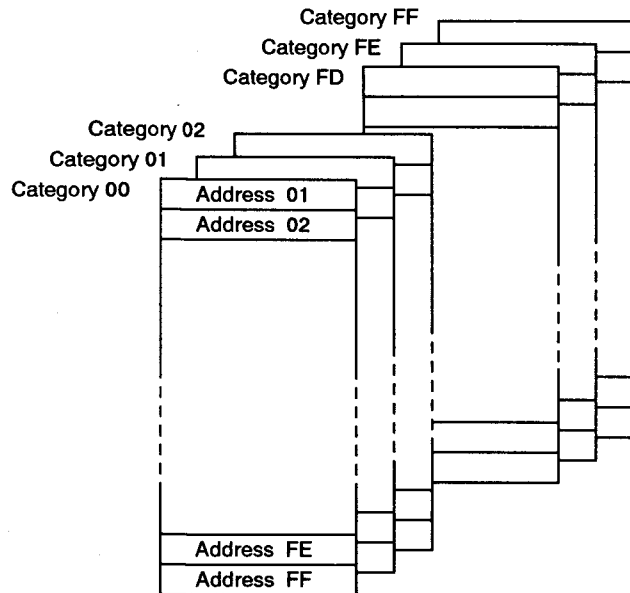


Command Name	Command Function	Normal LANC Command
Page Up	Page+1	Edit Search+
Page Down	Page-1	Edit Search -
Direct Page Set	Sets to the specified page	Event Clear
Address Up	Address+1	Fast Forward
Address Down	Address-1	Rewind
Data Up	Data+1	Play Back
Data Down	Data-1	Stop
Store	Writes data in the EEPROM, RAM	Pause

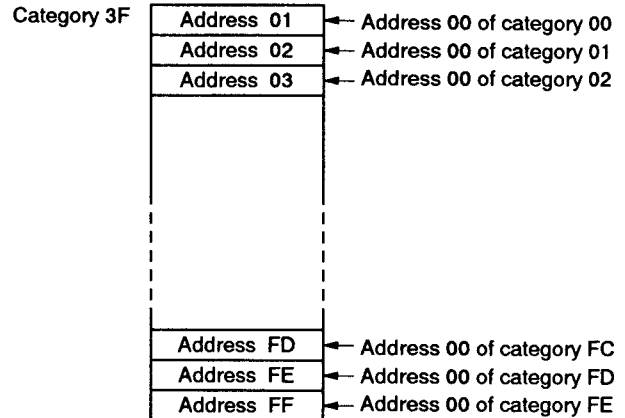
(2) Category Codes

This unit uses category codes for pages 2 and 3. The 256 addresses from 00 to FF are insufficient for the mode controller and mechanism controller to access the RAM. Therefore, new category codes have been used to seemingly increase addresses (Addresses 0000 to FFFF).

However, the data of address 00 are actually used as page numbers to form the 256 pages from 00 to FF, as shown in the following figure. These address 00 data are called category codes to discriminate them from the real page numbers. The new pages are called categories.



(Supplement) As each category no longer has address 00 as it is, this address cannot be accessed using the adjusting remote commander. Therefore, category 3F is used for accessing address 00.



(Example)

Specification of	Page 2	Category 01	Address 16
------------------	--------	-------------	------------

Page 2 is the mode controller

Page 3 is the mechanism controller

The actual category and address are specified by the adjusting remote commander as follows.

Order	Page	Address	Data	Procedure
1	2	00	01	Select category 01 using the data of page 2, address 00. From here onwards, category 01 will be selected at page 2 until the data of page 2, address 01 is rewritten.
2	2	16		As the data of page 2, address 00 is 01, select page 2, address 16 to select page 2, category 01, address 16. (The data of this address is the A/D conversion value of the input voltage of Pin ② of the mode controller.)

2. Page D Write Protect

Release/set the page D write protect.

Page 1	Address 00
--------	------------

Data	Function
00	Normal (Write protect condition)
01	Write protect release

3. Test Mode Setting

Set/release various test mode. Release the protect (page: 1, address: 00, data: 01) before setting the data.

Page D	Address 01
--------	------------

Data	Function
00	Normal
01	Test mode 1 Various emergency prohibitions and releases Drum, capstan, loading motor, reel, tape top and end, DEW SP/LP automatic discrimination prohibition, manual switching 5 minutes pause release prohibition Power off prohibition/release by battery end
02	Test mode 2 Not used
03	Test mode 3 Track shift Performs the track shift playback Rear lock discrimination prohibition during PB SP/LP automatic discrimination prohibition, manual switching
04	Test mode 4 Rear lock mode Performs rear lock playback SP/LP automatic discrimination prohibition, manual switching

- ※ The data of these addresses can be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power supply (6.5 Vdc) has been turned off.
- ※ Be sure to return the data of this address to 00 after adjustments/repairs.

4. Emergency code

Fault (error) symptoms can be checked.

Page D	Address 06
--------	------------

First emergency code

.....The first error code generated

Page D	Address 07
--------	------------

Last emergency code

.....The last error code generated (This data will be renewed each time an error occurs.)

- ※ Be sure to rewrite the data of addresses 06 and 07 to 00 after repairs/adjustments.
- ※ When rewriting the data, be sure to press the PAUSE button of the adjusting remote commander after setting the data.

Code	Error Condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Reel errors at other times
04	Capstan error
05	FG error during drum start up
06	PG error during drum start up
07	FG error when drum is normal
08	PG error when drum is normal
09	Phase error when drum is normal

5. Emergency mode

The operation mode set when the error occurred can be checked

Page D	Address 08
--------	------------

First emergency mode

.....The operation mode set when the first error occurred

Page D	Address 09
--------	------------

Last emergency mode

.....The operation mode set when the last error occurred
(This data will be renewed each time an error occurs.)

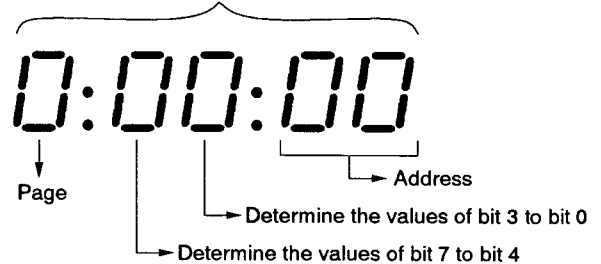
Code	Error Conditions
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
26	X1
27	1/5 SLOW
31	UNLOADING
36	-X1
37	-1/5 SLOW
46	CUE
47	1/10 SLOW
56	REVIEW
57	-1/10 SLOW
62	STOP TAPE END
66	X2
67	FRAME
72	STOP TAPE TOP
76	-X2
77	-FRAME
83	REWIND
85	REC REVIEW (+)
95	REC REVIEW (-)
A2	EMERGENCY STOP
A5	EDIT SEARCH(+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH (-)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

- ※ Be sure to rewrite the data of addresses 08 and 09 to 00 after repairs/adjustments.
- ※ When rewriting the data, be sure to press the PAUSE button of the adjusting remote commander after setting the data.

6. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".

Adjusting remote commander display



Remote controller display	Bit value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
⑧→ 8	1	0	0	0
9	1	0	0	1
A(A)	1	0	1	0
B(b)	1	0	1	1
C(c)	1	1	0	0
D(d)	1	1	0	1
⑨→ E(E)	1	1	1	0
F(F)	1	1	1	1

(Example) If the remote commander display data is "8E", bit values from bit 7 to bit 4 can be discriminated from column ⑧, and those from bit 3 to bit 0 from column ⑨.

7. Key Input check

Page 2	Category 3F	Address 01
--------	-------------	------------

Bit	Key Switch	Condition of Switch
0		"1"=OFF "0"=ON
1	PACK DET	
2	Cassette eject (PE-13, S201)	
3	Power supply (PE-13, S202)	
4		
5		
6	CC DOWN (Mechanism section)	
7		

Using method:

Order	Page	Address	Data	Procedure
1	2	00	3F	Specification of category 3F
2	2	01		The on/off of each key switch can be discriminated by discriminating the bit values of the display data.

Page 2	Category 00	Address 0E
--------	-------------	------------

Bit	Switch	Condition of Switch
0		
1		
2		
3		
4		
5		
6	LINE STEREO	Audio input/output terminal (right), "1"=Connected, "0"=Open
7		

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	0E		The on/off of the switches can be discriminated by discriminating the bit values of the display data.

Page 2	Category 00	Address 1C
--------	-------------	------------

Bit	Switch	Condition of Switch
3	LCD ON/OFF (PE-13, S206)	"1"=ON, "0"=OFF

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	1C		The on/off of the switches can be discriminated by discriminating the bit values of the display data.

8. Key Input check (A/D Port)

Page 2	Category 01	Address 16 – 18
--------	-------------	-----------------

Display Data Address	Approx. 00	Approx. 2D	Approx. 4C	Approx. 70	Approx. 8E	Approx. B2	Approx. FF
16 (KEY AD IN 0 IC201 ②)	REC (FU-109, S301)	STOP (FU-109, S302)	FF (FU-109, S303)	PLAY (FU-109, S304)	SLOW (FU-109, S305)		No key input
17 (KEY AD IN 1 IC201 ③)	PAUSE (FU-109, S306)	REW (FU-109, S307)	COUNTER RESET (PE-13, S203)	DATA SCREEN (PE-13, S204)			No key input
18 (KEY AD IN 2 IC201 ④)	VOLUME + (VR-39, S501)	VOLUME – (VR-39, S502)	BRIGHT+ (VR-39, S503)	BRIGHT – (VR-39, S504)	MENU (VR-39, S505)	ENTER (VR-39, S506)	No key input

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Specification of category 01
2	2	16–18		The key pressed can be discriminated by the display data of each address.

9. Battery voltage check

Page 3	Category 02	Address 10
--------	-------------	------------

Display Data	Battery Voltage
FF	Approx. 10 Vdc
F0	Approx. 9.4 Vdc
E0	Approx. 8.8 Vdc
D0	Approx. 8.2 Vdc
C0	Approx. 7.5 Vdc
B0	Approx. 6.9 Vdc
A0	Approx. 6.3 Vdc
90	Approx. 5.6 Vdc
80	Approx. 5.0 Vdc

Using method:

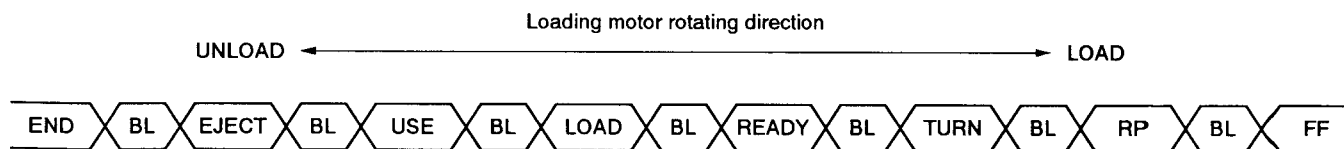
Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	10		The battery voltage can be discriminated by the display data.

10. Mechanism section switch, etc. check

Page 2	Category 00	Address 86
--------	-------------	------------

Bit	Switch, etc.	Condition
0	HG/NOR	"1"=Hi8 MP tape, "0"=Others
1	E DET	"1"=Hi8 mode playback, "0"=Others
2	ME/MP SW	"1"=ME tape, "0"=MP tape
3	REC PROOF	"1"=Recording prohibited, "0"=Recording possible
4		
5	MODE SW 2	Refer to the following table.
6	MODE SW 1	
7	MODE SW 0	

Display Data	MODE SW 0	MODE SW 1	MODE SW 2	Mechanism Position	Function	CC DOWN
0	0	0	0	BL	Interval between each position	
6	0	1	1	END	FULL END processing (Releasing the T side lock.)	1
2	0	0	1	EJECT	Eject position of cassette compartment	1
A	1	0	1	USE	EJECTED (Unskate end)	1
2	0	0	1	LOAD	LOADING (Skate in)	0
8	1	0	0	READY	NORMAL STOP position	0
C	1	1	0	TURN	Only pinch roller turns off during PB ↔ REV (oscillating position)	0
4	0	1	0	RP	PB, REC, RVS, REV, REW, CUE	0
0	0	0	0	FF	FF	0



Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	86		The mode switch position can be discriminated by the upper digit of the display data. The condition of each switch can be discriminated by the bit value of the lower digit.

11. Mechanism controller Input/output check

Page 2	Category 00	Address 85
--------	-------------	------------

Bit	I/O Signal	Condition
0	PB LP/SP DET	"1"=LP playback, "0"=Others
1	SYNC DET	"1"=VTR SYNC present, "0"=No VTR SYNC
2	REC CLOG	"1"=Clog occurred, "0"=Others
3		
4	JOG	"1"=Variable speed playback, "0"=Others
5	VA PB MODE	"1"=Playback mode, "0"=E-E mode
6	AUDIO MUTE	"1"=Mute, "0"=Audio output
7	VIDEO MUTE	"1"=Mute, "0"=Video output

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Specification of category 00
2	2	85		The condition of each input/output signal can be discriminated by the bit value of the display data.

12. Mechanism controller A/D Port Input voltage check

Page 3	Category 02	Address 14
--------	-------------	------------

Display Data	A/D Port Input Voltage
00 to FF	Approx. 0 Vdc to approx. 5 Vdc

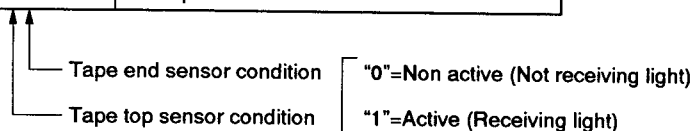
Using method:

Order	Page	Address	Data	Procedure																
1	3	00	02	Specification of category 02																
2	3	0E	02	Permission for A/D conversion operations																
3	3	13		Set the data according to the following table, and specify the A/D port of the mechanism controller. <table><tr><th>Data</th><th>Mechanism Controller Port</th></tr><tr><td>00</td><td>Pin 60; AN0, T REEL FG</td></tr><tr><td>01</td><td>Pin 59; AN1, S REEL FG</td></tr><tr><td>02</td><td>Pin 58; AN2, ATF ERROR</td></tr><tr><td>03</td><td>Pin 57; AN3, BATT SENS</td></tr><tr><td>04</td><td>Pin 56; AN4, DEW DET</td></tr><tr><td>05</td><td>Pin 55; AN5, TAPE TOP</td></tr><tr><td>06</td><td>Pin 54; AN6, TAPE END</td></tr></table>	Data	Mechanism Controller Port	00	Pin 60; AN0, T REEL FG	01	Pin 59; AN1, S REEL FG	02	Pin 58; AN2, ATF ERROR	03	Pin 57; AN3, BATT SENS	04	Pin 56; AN4, DEW DET	05	Pin 55; AN5, TAPE TOP	06	Pin 54; AN6, TAPE END
Data	Mechanism Controller Port																			
00	Pin 60; AN0, T REEL FG																			
01	Pin 59; AN1, S REEL FG																			
02	Pin 58; AN2, ATF ERROR																			
03	Pin 57; AN3, BATT SENS																			
04	Pin 56; AN4, DEW DET																			
05	Pin 55; AN5, TAPE TOP																			
06	Pin 54; AN6, TAPE END																			
4	3	14		The A/D port input voltage can be discriminated according to the display data.																

13. Tape top/end sensor check

Page 3	Category 02	Address 0A
--------	-------------	------------

Display Data	Tape Top/End Sensor Condition
0 0	Tape present (Middle of tape)
0 1	Tape top
1 0	Tape end
1 1	No tape



Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	0E	10	Request for tape top/end sampling operations
3	3	0A		The condition of the tape top/end sensor can be discriminated by the display data.

14. Individual operations of drum, capstan, and loading motor

Page 2	Category 02	Address 11
--------	-------------	------------

Data	Operations
00	Normal
02	Drum in normal rotation
04	Drum in reverse rotation
06	Capstan in normal rotation
08	Capstan in reverse rotation
0A	Loading motor in normal rotation
0C	Loading motor in reverse rotation
01	All motors stop
03	
05	
07	
09	
0B	
0D	
0F	

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Specification of category 02
2	3	0E	01	Permission for individual operations of motor
3	3	11		The motor can be operated individually by setting the data indicated above.
4				Turn off the main power supply (6.3 Vdc).

15. Page D Address List

Address	Name	Function () contains the adjustment voltage output terminal	Adjustment data	
			Initial level	Memo column
00	Category code		00	00
01	Test mode		00	00
02			81	81
03	BATT END DATA	Battery end adjustment	80	
04	SW POS ADJ DATA LOW	Switching position adjustment (Fine adjustment)	80	
05	SW POS ADJ DATA HIGH	Switching position adjustment (Rough adjustment)	0A	
06	EMERGENCY CODE FIRST	Error codes and modes are recorded in the memory. Rewrite the data of these addresses to 00 after repairs/adjustments.	00	00
07	EMERGENCY CODE LAST		00	00
08	EMERGENCY MODE FIRST		00	00
09	EMERGENCY MODE LAST		00	00
0A	VIDEO DATA MP SP	CXA1207 serial data	2A	2A
0B	VIDEO DATA MP LP	CXA1207 serial data	15	15
0C	VIDEO DATA MP SP HI8	CXA1207 serial data	2A	2A
0D	VIDEO DATA MP LP HI8	CXA1207 serial data	15	15
0E	VIDEO DATA ME SP	CXA1207 serial data	2A	2A
0F	VIDEO DATA ME LP	CXA1207 serial data	15	15
10	VIDEO DATA ME SP HI8	CXA1207 serial data	26	26
11	VIDEO DATA ME LP HI8	CXA1207 serial data	15	15
12	VIDEO DATA EDIT	CXA1207 serial data	6A	6A
13	VIDEO DATA EDIT HI8	CXA1207 serial data	55	55
14		Not used		
15		Not used		
16	SW POS ADJ NTSC LOW	NTSC Switching position adjustment (Fine adjustment)	80	
17	SW POS ADJ NTSC HIGH	NTSC Switching position adjustment (Rough adjustment)	0A	
18	SLOW TRACON SP	"Slow tracking adjustment (SP mode)" (Note 1)	00	00
19	SLOW TRACON LP	"Slow tracking adjustment (LP mode)" (Note 1)	00	00
1A	HP VOL	"Volume" adjustment center value (IC206 ③)	80	80
1B	BRIGHT	"Brightness" adjustment center value(IC906 ⑤)	80	80
1C	COLOR	"Color" adjustment (IC906 ⑨) (Note 1)	80	80
1D	HUE	"Hue" adjustment (IC906 ⑫) (Note 1)	80	80
1E	MENU DATA 1	(Note 1)	00	00
1F	MENU DATA 1	(Note 1)	00	00
20	SET VARIATION		00	00
21	ADJUST MODE		00	00
22 to 2C		Not used		
2D	BATT REMAIN LOW	Battery end adjustment	95	
2E	BATT REMAIN MIDDLE	Battery end adjustment	9B	
2F	BATT REMAIN FULL	Battery end adjustment	9F	
30	REC C	REC C level adjustment (IC705 ⑧)	A0	
31 to 35		Not used		
36	M TUNE 1CH	Playback frequency characteristics adjustment (IC206 ⑤)	A5	
37 to 3D		Not used		
3E	M TUNE 2CH	Playback frequency characteristics adjustment (IV206 ⑥)	A0	

Table 8-2 (1).

Note 1: User control (Adjust or set on the menu display.)

Address	Name	Function () contains the adjustment voltage output terminal	Adjustment data	
			Initial level	Memo column
3F to 47		Not used		
48	RF CONT ME		A4	A4
49	RF CONT MP		AE	AE
4A	SYNC AGC	SYNC AGC adjustment (IC705 ⑩)	75	
4B		Not used		
4C	C COMB ADJUST	Y/C separation adjustment (IC705 ②)	8A	
4D	IR	IR adjustment (IC705 ②)	A5	
4E	CAR HI8	(IC705 ④)	50	50
4F	CAR	Y FM carrier frequency adjustment (IC705 ④)	B0	
50	DEVIATION HI8	(IC705 ⑤)	50	50
51	DEVIATION	Y FM deviation adjustment (IC705 ⑤)	95	
52	REC Y HI8 ME	(IC705 ⑥)	D0	D0
53	REC Y HI8 MP	(IC705 ⑥)	D0	D0
54	REC Y	REC Y level adjustment (IC705 ⑥)	AA	
55		Not used		
56	REC Y PB		00	00
57	DEEMPH Y REC		90	90
58	DEEMPH Y PB	DEEMPH Y level adjustment (IC705 ⑦)	A0	
59		Not used		
5A	EMPH/PB Y REC	EMPH Y level adjustment (IC705 ③)	A5	
5B	EMPH/PB Y PB	PB Y level adjustment (IC705 ③)	AA	
5C to 63		Not used		
64	PILOT CONT ME		C0	C0
65	PILOT CONT MP		90	90
66		Not used		
67	PAL JOG	Not used (IC705 ⑨)	FF	FF
68 to 77		Not used		
78	1.5 DEV PB	1.5 MHz playback level adjustment (IC206 ⑩)	A0	
79	1.7 DEV PB	1.7 MHz playback level adjustment (IC206 ②)	80	
7A	1.5 IR	1.5 MHz carrier frequency adjustment (IC206 ⑩)	A0	
7B	1.5 DEV REC	1.5 MHz deviation adjustment (IC206 ⑩)	80	
7C	1.7 IR	1.7 MHz carrier frequency adjustment (IC206 ④)	A0	
7D	1.7 DEV REC	1.7 MHz deviation adjustment (IC206 ②)	80	
7E to 83		Not used		
84	R BRT	R sub-bright adjustment (IC906 ②)	A8	
85	G BRT	G sub-bright adjustment (IC906 ③)	A8	
86	B BRT	B sub-bright adjustment (IC906 ④)	A8	
87	B COM	B sub-bias adjustment (IC906 ⑥)	A8	
88	R COM	R sub-bias adjustment (IC906 ⑦)	A8	
89	COM	RGB bias adjustment (IC906 ⑧)	A8	
8A	GAIN	Contrast adjustment (IC906 ⑩)	A8	
8B	R GAIN	R contrast adjustment (IC906 ⑩)	A8	
8C	B GAIN	B contrast adjustment (IC906 ⑩)	A8	

Table 8-2 (2).

Address	Name	Function () contains the adjustment voltage output terminal	Adjustment data	
			Initial level	Memo column
8D	CAP FG DUTY	CAF FG duty adjustment (IC206 ⑧)	80	
8E	RF CONT ME		A0	A0
8F	RF CONT MP		A0	A0
90	PILOT CONT ME	Not used	C0	C0
91	PILOT CONT MP	Not used	90	90
92	HP VOL	"Volume" adjustment value (IC206 ③)	80	80
93	BRIGHT	"Brightness" adjustment value (IC906 ⑤)	80	80
94	COLOR	"Color" adjustment value (IC906 ⑨)	80	80
95	HUE	"Hue" adjustment value (IC906 ⑫)	80	80
96 to FF		Not used		

Table 8-2 (3).

Note 2: The adjustment data initial value is the data input before performing video section adjustments (Page D) if the data of Page D has been erased due to some reason.

Note 3: The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation																
	0	1	2	3	4	5	6	7	8	9	A (R)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (R)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
B (b)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: () indicate the adjusting remote control unit display.

(Example) In the case that the adjusting remote control unit display are BD (b d).

As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 8-3.

8-2. POWER SUPPLY SYSTEM ADJUSTMENTS

1. Oscillation frequency check (MA-165 board)

Mode	E-E
Measurement Point	Q001 collector
Measuring Instrument	Frequency counter
Specified Value	1000 $\pm$ 30 kHz

2. Power supply voltage check (MA-165 board)

Mode	E-E
Measuring Instrument	Digital voltmeter
SW 5V check	
Measurement Point	Pins ⑭ and ⑮ of W001
Specified Value	4.95 $\pm$ 0.2 Vdc
13V check	
Measurement Point	Pin ① of CN016
Specified Value	13.0 $\pm$ 0.5 Vdc
-8V check	
Measurement Point	Pin ④ of CN016
Specified Value	-8.0 $\pm$ 0.5 Vdc
-20V check	
Measurement Point	Pin ① of CN015
Specified Value	-20 $\pm$ 1 Vdc
DRUM VS check	
Measurement Point	Pin ⑬ of IC103
Specified Value	1.5 $\pm$ 0.3 Vdc (Note)
CAPSTAN VS check	
Measurement Point	Pin ⑳ of CN004
Specified Value	2.0 $\pm$ 0.3 Vdc (Note)

Note: The voltages of the drum and capstan servo will change according to tape and load conditions.

8-3. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. EEPROM data Input

If the data of page D has been erased due to some reason, input data to this page before adjusting. Refer to the "Page D address list" in "8-1-7. Service Mode" for the data of page D.

(1) Page D data Input

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 95

Inputting method:

- 1) Release the write protect.
Page: 1, address: 00, data: 01
- 2) Select page D, and input the initial value to each address.
(After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote commander before changing the address.)

2. Battery end adjustment

Mode	Record (SP)
Signal	Arbitrary
Measurement Point	LCD display of adjusting remote commander
Measuring Instrument	
Adjustment Page	D
Adjustment Address	03 (BATT END DATA)

Connection:

- 1) Connect the regulated power supply and digital voltmeter as shown in Fig. 8-4.

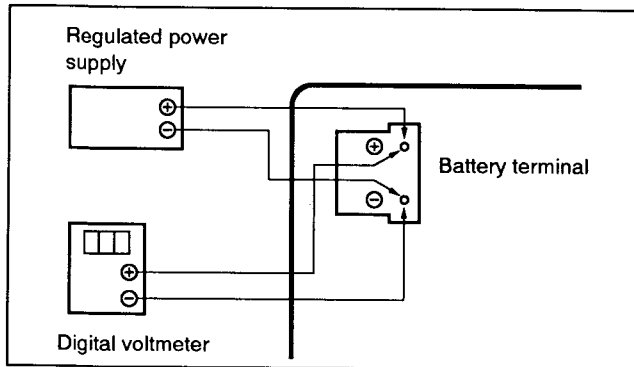


Fig. 8-4.

Adjusting method:

- 1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.5 ± 0.1 Vdc.
 - 2) Set the record mode.
 - 3) Release the protect.
Page: 1, address: 00, data: 01
 - 4) Set data: 01 to page: D, address: 01.
(Setting test mode 1.)
 - 5) Lower the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.50 ± 0.01 Vdc.
 - 6) Select page: 3, address: 00, and set data: 02.
(Specifying category 02.)
 - 7) Select page: 3, address: 10, read the display data of the adjusting remote commander, and take it as D03.
 - 8) Set data: D03 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
 - 9) Convert D03 to a decimal numeral to obtain D03'.
 - 10) Calculate the adjustment data (decimal numeral) from the following equation (decimal calculation), convert it to a hexadecimal numeral, and input to each adjustment address.
Address: 2D $D2D' = D03' + 15$
Address: 2E $D2E' = D03' + 19$
Address: 2F $D2F' = D03' + 21$
- Note:** Be sure to press the PAUSE button of the adjusting remote commander after setting each data.
- 11) Set data: 00 to page: D, address: 01.
(Releasing test mode 1)
 - 12) Perform "Battery down check".

3. Battery down check

Mode	Record
Signal	Arbitrary

Connection:

- 1) Connect the regulated power supply and digital voltmeter as shown in Fig. 8-4.

Checking method:

Remove the adjusting remote commander, and check as follows. If unsatisfactory, re-adjust.

- 1) Adjust the output voltage of the regulated power supply so that the display of the digital voltmeter becomes 6.5 ± 0.1 Vdc.
- 2) Set the recording mode.
- 3) Lower the output voltage of the regulated power supply so that the display of the digital voltmeter becomes 5.75 ± 0.01 Vdc.
- 4) Check that the power lamp is not blinking.
- 5) Lower the output voltage of the regulated power supply so that the display of the digital voltmeter becomes 5.55 ± 0.01 Vdc.
- 6) Check that the power lamp blinks every second.
- 7) Lower the output voltage of the regulated power supply so that the display of the digital voltmeter becomes 5.45 ± 0.01 Vdc.
- 8) Check that the power lamp blinks faster, the VTR stops, and the power supply turns off.

8-4. SERVO SYSTEM ADJUSTMENTS

1. PAL Switching position adjustment (RP-152 board)

Note: Set the following modes on the menu display and adjust.

REC MODE SP

PB SYSTEM PAL

Mode	Playback
Signal	Alignment tape: For adjusting tracking (WR5-1CP)
Measurement Point	CH1: Pin ③ of CN053 (RF SWP) CH2: Pin ② of CN053 (V RF OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04 (SW POS ADJ DATA LOW) 05 (SW POS ADJ DATA HIGH)
Specified Value	$t_1 = 0 \pm 5 \mu\text{sec.}$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Set data: 80 to page: D, address: 04.
- 3) Change the data of address: 05 (for rough adjustment) and address: 04 (for fine adjustment) of page: D, and adjust the switching position (t_1) to the specified value.
Note: Be sure to press the PAUSE button of the adjusting remote commander before changing the address. If not, the new data will not be written in the memory.
- 4) Press the PAUSE button of the adjusting remote commander.
- 5) Perform the "NTSC switching position adjustment".

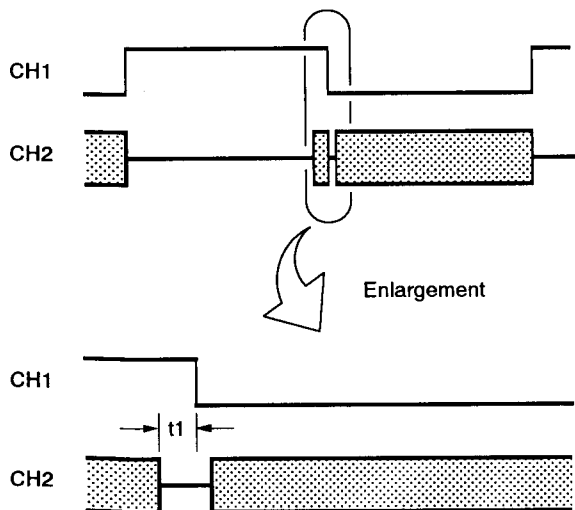


Fig. 8-5.

2. NTSC switching position adjustment

Adjustment Page	D
Adjustment Address	16 (SW POS ADJ NTSC LOW) 17 (SW POS ADJ NTSC HIGH)

Note: Perform this adjustment after completing "PAL switching position adjustment".

Adjusting Method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Read the data of page: D, address: 04 and take it as $D'04$.
- 3) Read the data of page: D, address: 05 and take it as $D'05$.
- 4) Convert $D'04$ and $D'05$ to decimal numerals and obtain $D'04$ and $D'05$. (Refer to Table 8-3.)
- 5) Obtain the decimal PAL switching position data ($D'PAL$) from the following equation.
$$D'PAL = (D'04 + D'05) \times 256$$
- 6) Obtain the decimal NTSC switching position data ($D'NTSC$) from the following equation. (Round off to a whole number.)
$$D'NTSC = D'PAL \times 0.8467$$
- 7) Obtain $D'17$ from the following equation. (Round off to a whole number.)
$$D'17 = D'NTSC \div 256$$
- 8) Obtain $D'16$ from the following equation.
$$D'16 = (D'NTSC - D'17) \times 256$$
- 9) Convert $D'16$ and $D'17$ to hexadecimal numerals and obtain $D16$ and $D17$. (Refer to Table 8-3.)
- 10) Set $D16$ to page: D, address: 16 and press the PAUSE button of the adjusting remote commander.
- 11) Set $D17$ to page: D, address: 17 and press the PAUSE button of the adjusting remote commander.

3. CAP FG duty adjustment (RP-152 board)

Mode	Record (SP)
Signal	Color bar
Measurement Point	Pin ④ of CN053 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	8D (CAP FG DUTY)
Specified Value	Duty=50 ± 1%

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Set data: 80 to page: D, address: 8D.
- 3) Change the data of page: D, address: 8D, and adjust the CFG waveform duty to the specified value.
- 4) Press the PAUSE button of the adjusting remote commander.

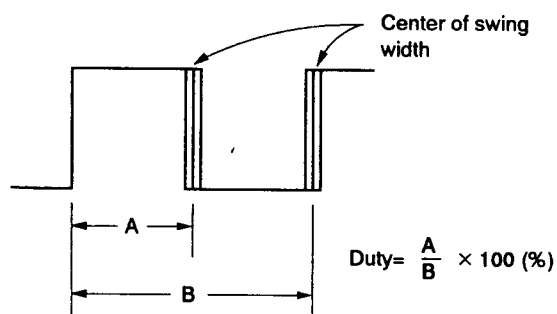


Fig. 8-6.

8-5. VIDEO SYSTEM ADJUSTMENTS

When adjusting the video system, connect the pattern generator as shown in the following figure. At this time, terminate Pins ⑦ (TV/CAM VIDEO) and ③ (TV CAM V GND) on the J901 of the JK-86 board at 75 Ω resistor. Connect Pins ① (EXT AD) and ② (EXT GND) on this board with a 10 k Ω resistor.

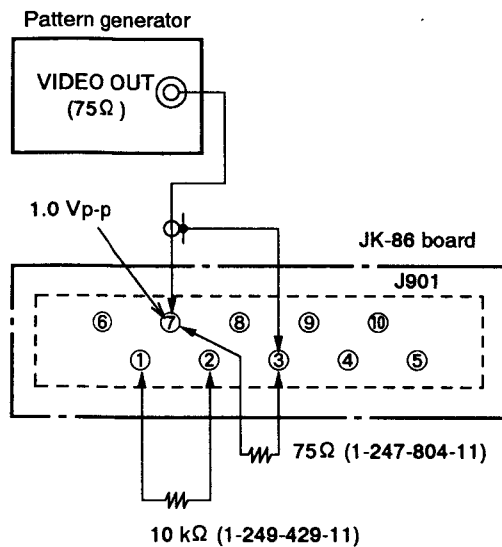


Fig. 8-7.

Basically, the video system must be adjusted according to the following adjustment procedures.

The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in the recording mode. Check that the sync signal and the color burst signal satisfy the specifications specified for the set-up for adjustments shown in Fig. 8-2.

Set the following modes on the menu display and adjust.

REC MODE SP
PB SYSTEM PAL

[Adjusting Procedure]

- 1) Playback frequency characteristics adjustment
- 2) Flying erase check
- 3) VXO oscillation frequency check
- 4) 4.47 MHz XO oscillation frequency check
- 5) SYNC AGC adjustment
- 6) IR adjustment
- 7) Y/C separation adjustment
- 8) EMPH Y level adjustment
- 9) DE EMPH Y level adjustment
- 10) PB Y level adjustment
- 11) Y FM carrier frequency adjustment
- 12) Y FM deviation adjustment
- 13) Chroma emphasis f₀ adjustment
- 14) REC Y level adjustment
- 15) REC C level adjustment
- 16) REC ATF level check
- 17) Quasi burst phase adjustment
- 18) Delay burst phase adjustment

1. Playback frequency characteristics adjustment (RP-152 board)

Note: [] contains the adjusting element of CH2.

Mode	Playback
Signal	Alignment tape: For adjusting frequency characteristics (WR5-7CE)
Measurement Point	CH1: Pin ② of CN053 (V RF OUT) External trigger: Pin ③ of CN053 (RF SWP)
Measuring Instrument	Oscilloscope TRIG. SLOW: +[−]
Adjustment Page	D
Adjustment Address	36 (M TUNE 1CH) [3E (M TUNE 2CH)]
Specified Value	4.5 MHz level: 7 MHz level= 40:(34 ± 2)

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 36 [address: 3E], and adjust the 4.5 MHz and 7 MHz level ratio of the PB RF output waveform to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

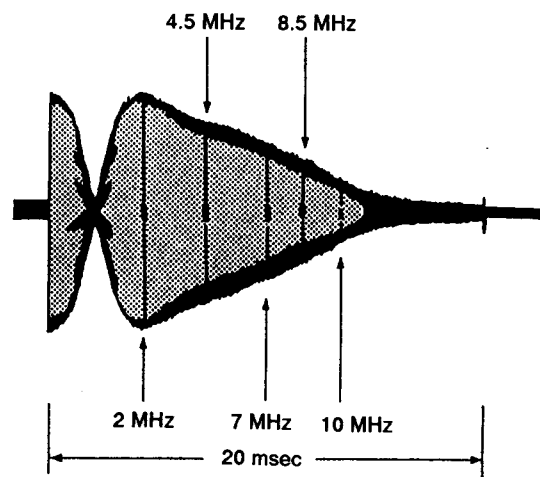


Fig. 8-8.

2. Flying erase check (RP-152 board)

Mode	Record
Signal	Arbitrary
Measurement Point	Pin ② of CN052 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: Above 7.8 ± 0.7 MHz Voltage: Above 7.0 Vp-p

Note: Use a MP type tape.

Checking method:

- 1) Check that the oscillating frequency is 7.8 ± 0.7 MHz, and that the oscillating voltage is above 7.0 Vp-p.

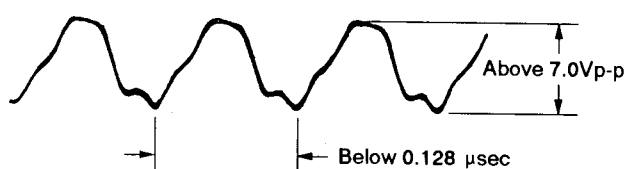


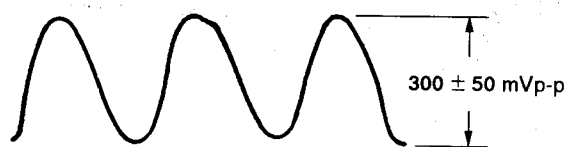
Fig. 8-9.

3. VXO oscillating frequency check (MA-165 board)

Mode	Playback
Signal	Color bar
Measurement Point	Pin ⑭ of IC805
Measuring Instrument	Frequency counter
Specified Value	4433619 ± 150 Hz

Adjusting method:

- 1) Check that the fsc signal frequency is 4433619 ± 150 Hz.



(4433619 ± 150 Hz)

Fig. 8-10.

4. 4.47 MHz XO oscillation frequency check (MA-165 board)

Mode	Playback
Signal	Color bar
Measurement Point	Pin ⑭ of IC805
Measuring Instrument	Frequency counter
Specified Value	4470593 ± 250 Hz

Adjusting Method:

- 1) Set the PB SYSTEM to "NTSC 1" on the menu display.
- 2) Check that the oscillation frequency of Pin ⑭ of IC805 is 4470593 ± 250 Hz.
- 3) Set the PB SYSTEM to "PAL" on the menu display.



(4470593 ± 250 Hz)

Fig. 8-11.

5. SYNC AGC level adjustment (MA-165 board)

Mode	Record
Signal	Color bar
Measurement Point	Video input/output terminal (Terminated at 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4A (SYNC AGC)
Specified Value	$A=1.00 \pm 0.05V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 4A, and adjust the Y signal level (A) to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

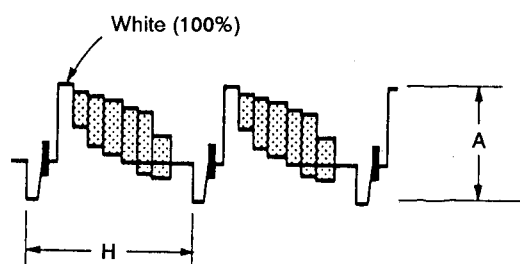


Fig. 8-12.

6. IR adjustment (MA-165 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑦ of IC701 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	4D (IR)
Specified Value	Minimum residual chroma component (A) (Below 60 mVp-p)

Connection:

- 1) Connect Pin ⑭ of IC701 (or Pin ② of IC703) to Pin ⑤ of IC701 with a jumper wire.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 4D, and minimize the residual chroma component (A).
- 3) Press the PAUSE button of the adjusting remote commander.

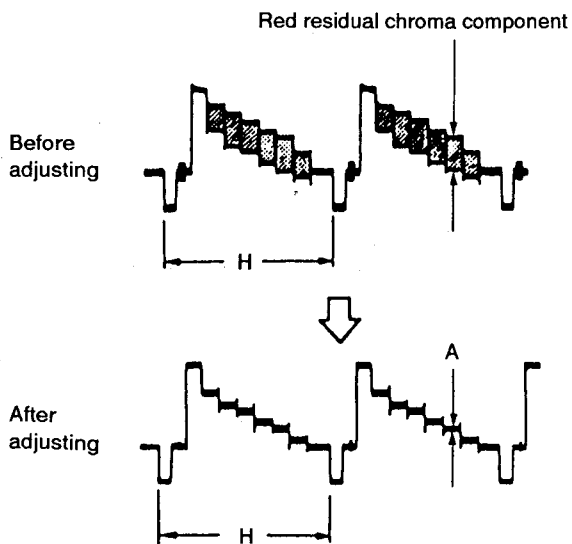


Fig. 8-13.

7. Y/C separation adjustment (MA-165 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑪ of IC701 (C+CD)
Measuring Instrument	Oscilloscope
Adjusting Element	RV701 (phase)
Adjustment Page	D
Adjustment Address	4C (C COMB ADJUST)
Specified Value	Minimum residual chroma component (A)

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 4C, and minimize the residual chroma component.
- 3) Minimize the residual chroma component (A) with RV701.
- 4) Repeat until the specifications in steps 2) and 3) are satisfied.
- 5) Press the PAUSE button of the adjusting remote commander.

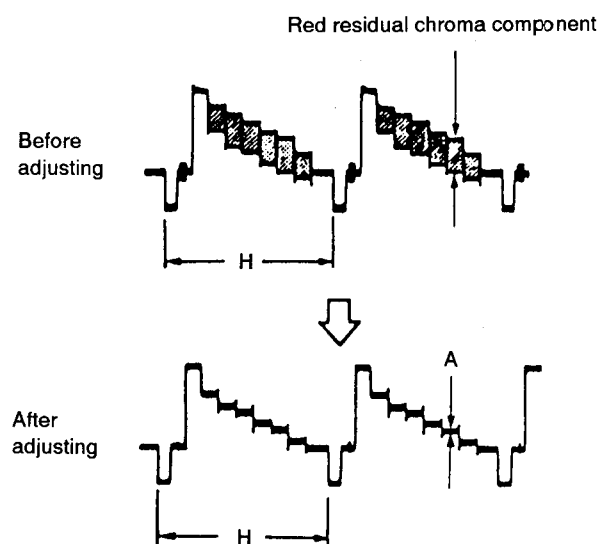


Fig. 8-14.

8. EMPH Y level adjustment (MA-165 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ⑤ of IC702 (or Pin ③ of IC701)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5A (EMPH Y)
Specified Value	$A=0.50 \pm 0.02V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 5A, and adjust the Y signal level (A) to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

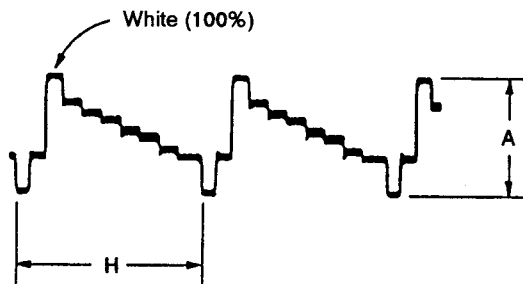


Fig. 8-15.

9. DE EMPH Y level adjustment (MA-165 board)

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section • Normal mode WR5-5CSP • Hi8 mode WR5-8CSE
Measurement Point	Pin ② of IC701
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	58 (DE EMPH)
Specified Value	$A=0.50 \pm 0.02V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Play back the color bar section of the normal mode alignment tape (WR5-5CSP).
- 3) Change the data of page: D, address: 58, and adjust the Y signal level (A) to the specified value.
- 4) Press the PAUSE button of the adjusting remote commander.
- 5) Play back the color bar section of the Hi8 mode alignment tape (WR5-8CSE).
- 6) Check that the Y signal level (A) is $0.50 \pm 0.02V$.

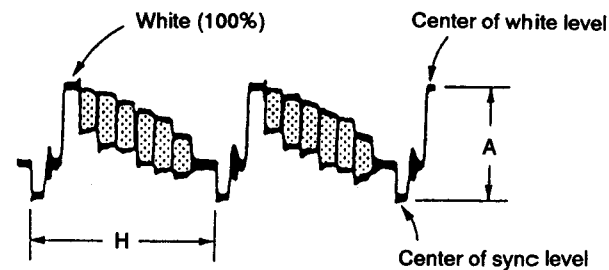


Fig. 8-16.

10. PB Y level adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video input/output terminal (Terminated at 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	5B (PB Y)
Specified Value	$A=1.0 \pm 0.05V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 5B, and adjust the video signal level (A) to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

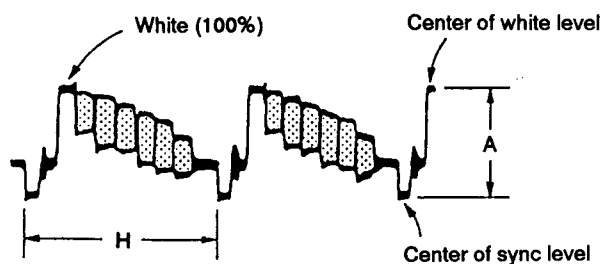


Fig. 8-17.

11. Y FM carrier frequency adjustment (MA-165 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ① of CN013 (REC Y)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	4F (CAR)
Specified Value	$4.38 \pm 0.02 \text{ MHz}$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 4F, and adjust the Y FM carrier frequency to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.
- 4) Perform the "Deviation adjustment".

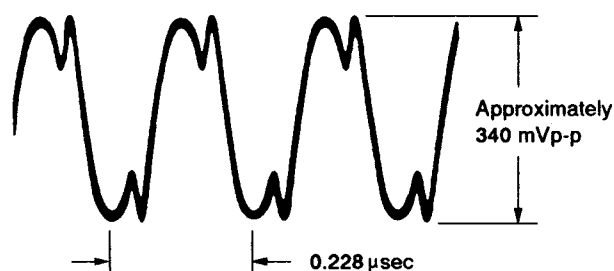


Fig. 8-18.

12. Y FM deviation adjustment (MA-165 board)

Mode	Record and playback
Signal	Color bar
Measurement Point	Pin ② of IC701
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	51 (DEV)
Specified Value	$A=0.50 \pm 0.02V$

Note: Check that the “DE EMPH Y level adjustment”, and “Y FM carrier frequency adjustment” have been completed.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Record the color bar signal.
- 3) Play back the recorded signal.
- 4) Check the playback signal level (A).
Specification: $A=0.50 \pm 0.02V$
- 5) If the specification has not been satisfied, change the data of page: D, address: 51, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When greater than the specified value	Decrease

- 6) Press the PAUSE button of the adjusting remote commander.

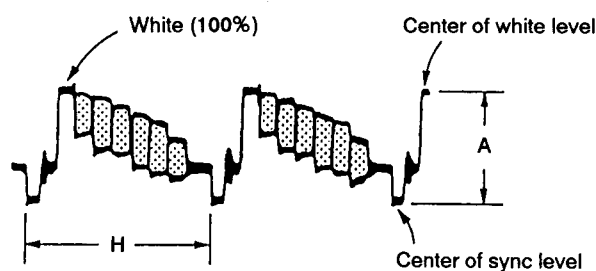


Fig. 8-19.

13. Chroma emphasis f0 adjustment (MA-165 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ② of IC801
Measuring Instrument	Oscilloscope
Adjustment Page	FL801
Adjustment Address	Minimum f0 component

Connection:

- 1) Connect a 3.3 kΩ resistor (1-249-423-11) between Pin ② of IC801 and the GND.

Adjusting method:

- 1) Minimize the amplitude of the latter section of the yellow part of the chroma signal with FL801.

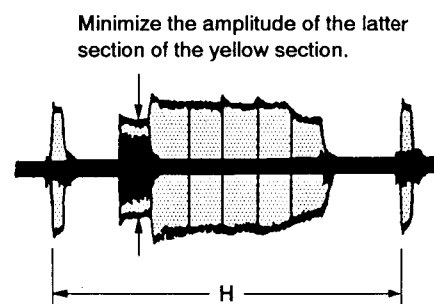


Fig. 8-20.

14. REC Y level adjustment (MA-165 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ① of CN013 (REC Y)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	54 (REC Y)
Specified Value	$A=340 \pm 10 \text{ mVp-p}$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 54, and adjust the Y signal level (A) to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

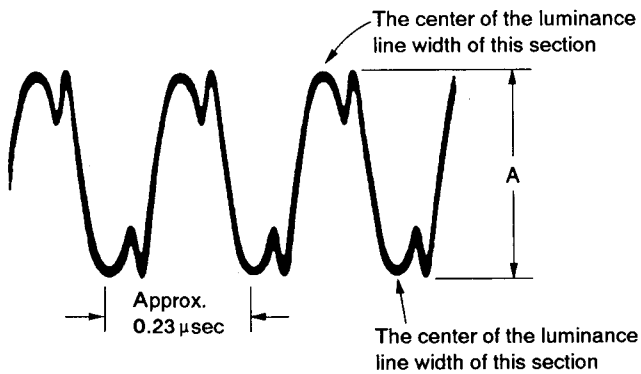


Fig. 8-21.

15. REC C level adjustment (MA-165 board)

Mode	Record
Signal	Color bar
Measurement Point	Pin ② of CN013 (REC C)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	30 (REC C RF)
Specified Value	$A=165 \pm 10 \text{ mVp-p}$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 30, and adjust the amplitude (A) of the flat section of the chroma signal (red) to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

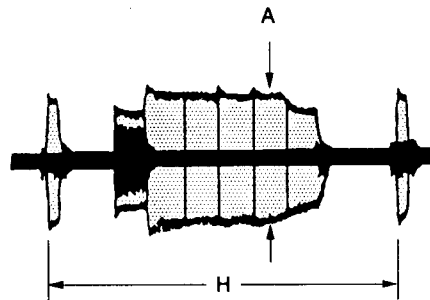


Fig. 8-22.

16. REC ATF level check (MA-165 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑩ of CN013 (REC ATF)
Measuring Instrument	Oscilloscope
Specified Value	$A=600 \pm 30 \text{ mVp-p}$

Checking method:

- 1) Check that the REC ATF signal level (A) satisfies the specified value.

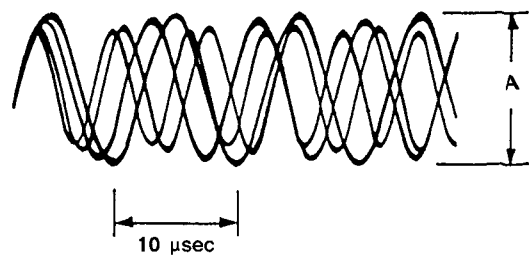


Fig. 8-23.

17. Quasi burst phase adjustment (MA-165 board)

Mode	Playback and playback pause
Signal	Alignment tape: For checking operations (WR5-4CL) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjusting Element	RV802
Specified Value	The phase difference between play back and playback pause is $0 \pm 3^\circ$.

Connection:

- 1) Input 4.43 MHz signal from pin ⑭ of IC805 to CH1 input of the oscilloscope.
- 2) Connect CH1 output of the oscilloscope to the EXT. subcarrier reference input of the vectorscope.
- 3) Turn on the EXT. subcarrier switch of the vectorscope.

Adjusting method:

- 1) Play back the color bar section.
- 2) Adjust the burst phase to $\pm 45^\circ$ with PHASE knob of the vectorscope.
- 3) Set up playback pause mode.
- 4) Adjust the burst phase to $\pm 45^\circ$ with RV802.

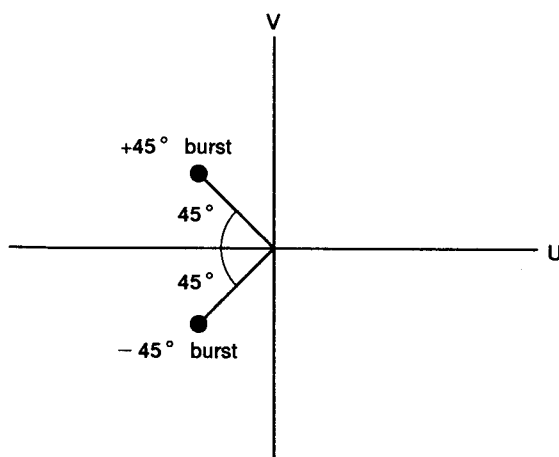


Fig. 8-24.

18. Delay burst phase adjustment (MA-165 board)

Mode	Playback pause
Signal	Alignment tape: For checking operations (WR5-4CL) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjusting Element	RV801
Specified Value	Minimum shaking of yellow and blue luminance points

Adjusting method:

- 1) Minimize the shaking of yellow and blue luminance points with RV801.

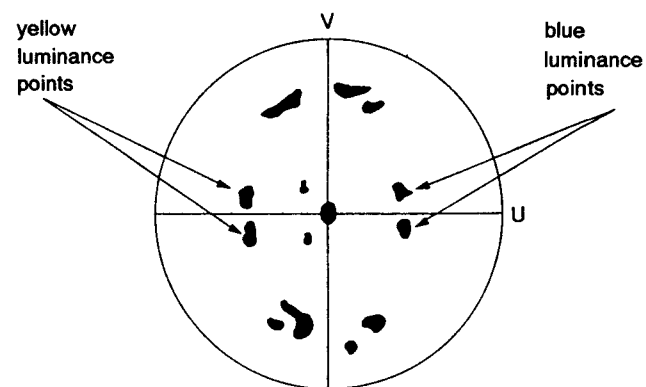


Fig. 8-25.

8-6. LCD SYSTEM ADJUSTMENTS

Note: Do not touch the LCD unit back light holder as you may receive an electric shock.

[Preparation]

- 1) Be sure to connect the LCD unit before adjusting.
- 2) Be sure to perform "EVR initial data input" before adjusting.

[Adjusting procedure]

1. fsc adjustment
2. EVR initial data input
3. G sub-bright adjustment
4. R sub-bright adjustment
5. B sub-bright adjustment
6. Contrast adjustment
7. R contrast adjustment
8. B contrast adjustment
9. Delay adjustment
10. Color adjustment
11. R sub-bias adjustment
12. B sub-bias adjustment
13. RGB bias adjustment
14. White balance adjustment
15. Character position adjustment

[Video Input signal for adjustments]

Input a color bar signal whose chroma and burst signals are turned off into the video input terminal as the video input signal for adjustments. Check the signal level at the video input/output terminal.

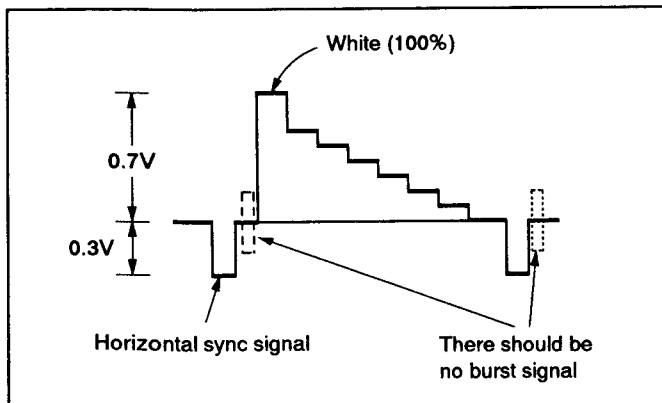


Fig. 8-26. Color bar signal whose chroma and burst signals are turned off.

1. fsc adjustment (RG-26 board)

Mode	POWER ON
Signal	No signal
Measurement Point	Pin ⑤ of IC901
Measuring Instrument	Frequency counter
Adjustment Page	RV902 (APC)
Adjustment Address	4433620 ± 50 Hz

Note: Connect the frequency counter with a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Adjusting method:

- 1) Adjust the fsc frequency to 4433620 ± 50 Hz with RV902.

2. EVR Initial data Input

Mode	POWER ON
Signal	Arbitrary
Adjustment Page	D

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Select page D, and input the data in the following table.
Note: To write in the nonvolatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time the data is set.

Address	Data
1B (BRIGHT)	80
1C (COLOR)	80
1D (HUE)	80
84 (R BRT)	A8
85 (G BRT)	A8
86 (B BRT)	A8
87 (B COM)	A8
88 (R COM)	A8
89 (COM)	A8
8A (GAIN)	A8
8B (R GAIN)	A8
8C (B GAIN)	A8
93 (BRIGHT)	80
94 (COLOR)	80
95 (HUE)	80

3. G sub-bright adjustment (RG-26 board)

Mode	POWER ON
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Pin ⑪ of IC902 (VG)
Measuring Instrument	Oscilloscope External trigger: Pin ⑩ of IC902 (FRP)
Adjustment Page	D
Adjustment Address	85 (G BRT)
Specified Value	$A=3.6 \pm 0.1V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Check that the data of page: D, address: 1B is 80 with the adjusting remote commander.
- 3) Change the data of page: D, address: 85, and adjust the amplitude level (A) of the VG signal to the specified value.
Amplitude: Level difference between the reverse waveform pedestal and non-reversed waveform pedestal.
- 4) Press the PAUSE button of the adjusting remote commander.

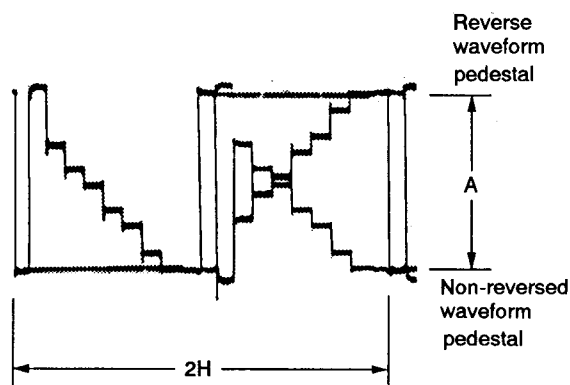


Fig. 8-27.

4. R sub-bright adjustment (RG-26 board)

Mode	POWER ON
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	CH1: Pin ⑪ of IC902 (VG) CH2: Pin ⑨ of IC902 (VR)
Measuring Instrument	Oscilloscope External trigger: Pin ⑩ of IC902 (FRP)
Adjustment Page	D
Adjustment Address	84 (R BRT)
Specified Value	Amplitude level difference between VR and VG signals= $0 \pm 0.1V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 84, and equalize the amplitude level of the CH1 waveform and the CH2 waveform.
- 3) Press the PAUSE button of the adjusting remote commander.

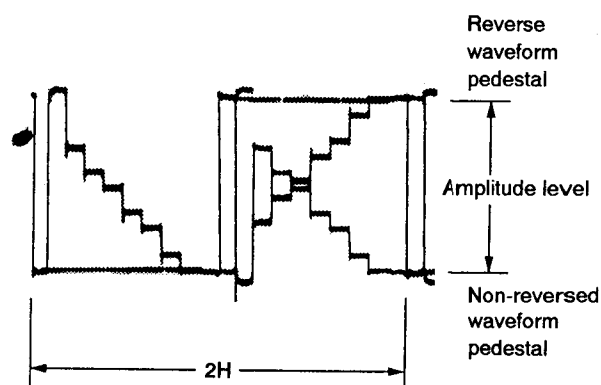


Fig. 8-28.

5. B sub-bright adjustment (RG-26 board)

Mode	POWER ON
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	CH1: Pin ⑪ of IC902 (VG) CH2: Pin ⑬ of IC902 (VB)
Measuring Instrument	Oscilloscope External trigger: Pin ⑩ of IC902 (FRP)
Adjustment Page	D
Adjustment Address	86 (B BRT)
Specified Value	Amplitude level difference between VB and VG signals= $0 \pm 0.1V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 86, and equalize the amplitude level of the CH1 waveform and the CH2 waveform.
- 3) Press the PAUSE button of the adjusting remote commander.

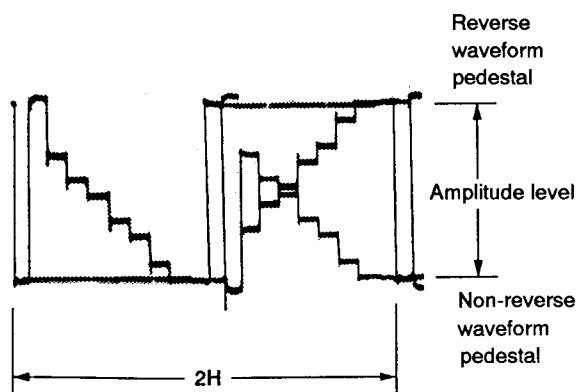


Fig. 8-29.

6. Contrast adjustment (RG-26 board)

Mode	POWER ON
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Pin ⑪ of IC902 (VG)
Measuring Instrument	Oscilloscope External trigger: Pin ⑩ of IC902 (FRP)
Adjustment Page	D
Adjustment Address	8A (GAIN)
Specified Value	$A = 2.6 \pm 0.1V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 8A and adjust the voltage (A) between the white (100%) and pedestal to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

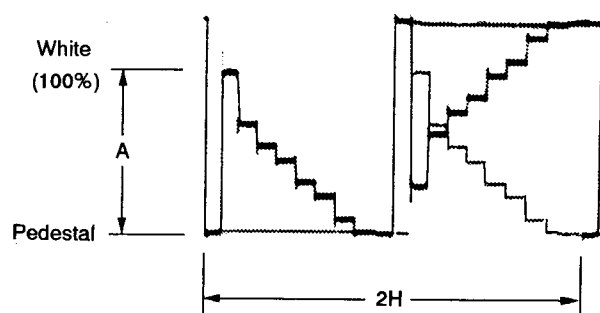


Fig. 8-30.

7. R contrast adjustment (RG-26 board)

Mode	POWER ON
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Pin ⑨ of IC902 (VR)
Measuring Instrument	Oscilloscope External trigger: Pin ⑩ of IC902 (FRP)
Adjustment Page	D
Adjustment Address	8B (R GAIN)
Specified Value	$A=2.6 \pm 0.1V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 8B, and adjust the voltage (A) between the white (100%) and pedestal to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

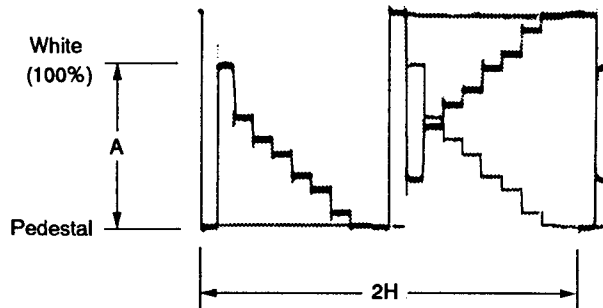


Fig. 8-31.

8. B contrast (RG-26 board)

Mode	POWER ON
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Pin ⑬ of IC902 (VB)
Measuring Instrument	Oscilloscope External trigger: Pin ⑩ of IC902 (FRP)
Adjustment Page	D
Adjustment Address	8C (B GAIN)
Specified Value	$A=2.6 \pm 0.1V$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 8C, and adjust the voltage (A) between the white (100%) and pedestal to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

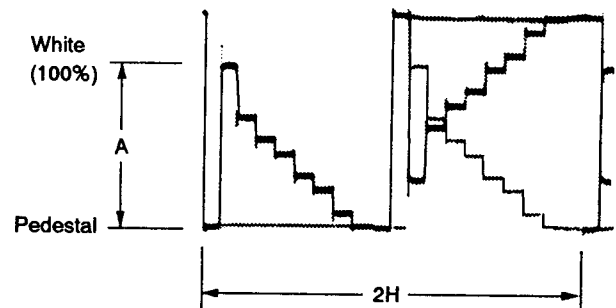


Fig. 8-32.

9. Delay adjustment (RG-26 board)

Mode	POWER ON
Signal	Color bar (Chroma and burst signals ON)
Measurement Point	Pin ⑨ of IC901 (G)
Measuring Instrument	Oscilloscope
Adjusting Element	RV903
Specified Value	Minimum level difference for every 1H (A and B).

Adjusting Method:

- 1) Minimize the level difference for every 1H (A and B) with RV903.

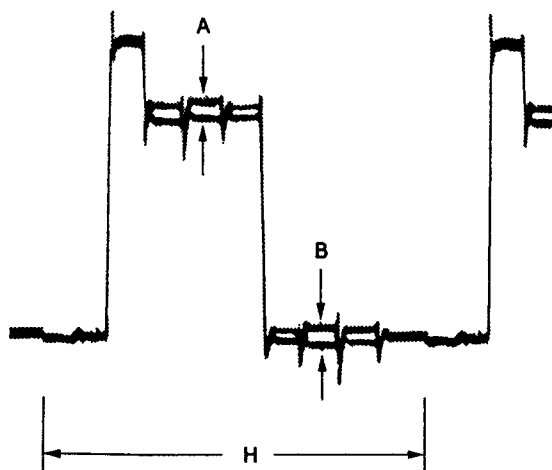


Fig. 8-33.

10. Color adjustment (RG-26 board)

Mode	POWER ON
Signal	Color bar with white (75%) (Chroma and burst signals ON)
Measurement Point	Pin ⑪ of IC902 (VG) Oscilloscope
Measuring Instrument	EXternal trigger: Pin ⑩ of IC902 (FRP)
Adjusting Element	RV904
Specified Value	A=0 ± 0.1V

Adjusting Method:

- 1) Check that the data of address 1C of page D is 80 with the adjusting remote commander.
- 2) Minimize the level difference between white 75% and green with RV904.

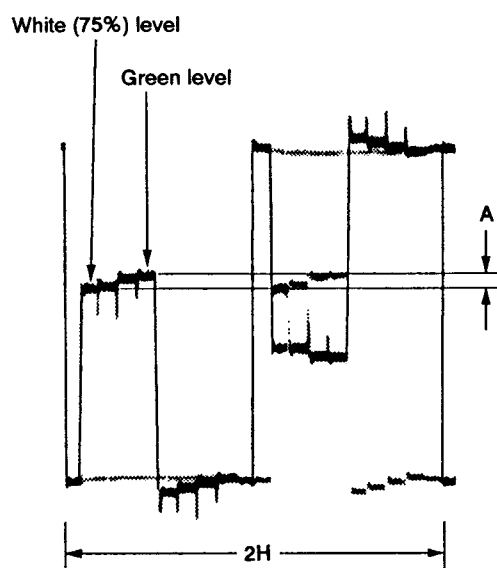


Fig. 8-34.

11. R sub-bias adjustment (RG-26 board)

Mode	POWER ON
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	CH1: Pin ⑪ of IC902 (VG) CH2: Pin ⑨ of IC902 (VR)
Measuring Instrument	Oscilloscope (DC range) External trigger: Pin ⑩ of IC902 (FRP)
Adjustment Page	D
Adjustment Address	88 (R COM)
Specified Value	DC level difference between the VR and VG signals= $0 \pm 0.1V$

Adjusting method:

- 1) Check that the data of page: D, address: 89 is A8 with the adjusting remote commander.
- 2) Set the oscilloscope to the DC range, and equalize the GND levels of CH1 and CH2.
- 3) Release the protect.
Page: 1, address: 00, data: 01
- 4) Change the data of page: D, address: 88, and coincide the CH1 and CH2 waveform. (To equalize the DC levels of the CH1 and CH2 waveform.)
- 5) Press the PAUSE button of the adjusting remote commander.

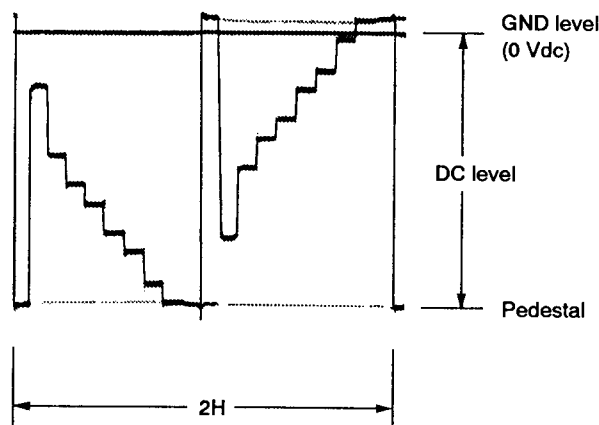


Fig. 8-35.

12. B sub-bias adjustment (RG-26 board)

Mode	POWER ON
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	CH1: Pin ⑪ of IC902 (VG) CH2: Pin ⑬ of IC902 (VB)
Measuring Instrument	Oscilloscope (DC range) External trigger: Pin ⑩ of IC902 (FRP)
Adjustment Page	D
Adjustment Address	87 (B COM)
Specified Value	DC level difference between the VB and VG signals= $0 \pm 0.1V$

Adjusting method:

- 1) Set the oscilloscope to the DC range, and equalize the GND levels of CH1 and CH2.
- 2) Release the protect.
Page: 1, address: 00, data: 01
- 3) Change the data of page: D, address: 87, and coincide the CH1 and CH2 waveform. (To equalize the DC levels of the CH1 and CH2 waveform.)
- 4) Press the PAUSE button of the adjusting remote commander.

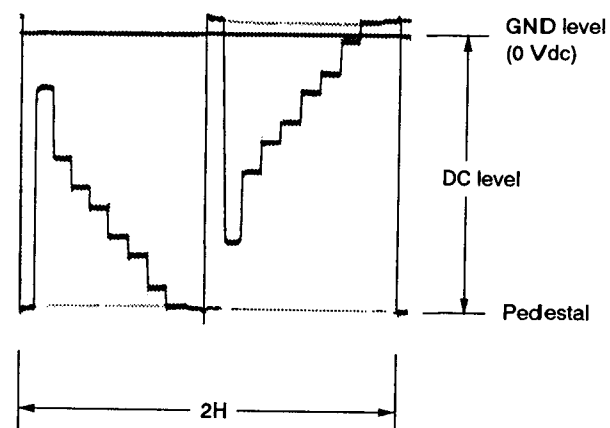


Fig. 8-36.

13. RGB bias adjustment

Mode	PB and PAUSE (LP)
Signal	Alignment tape: For checking operations (WR5-4CL) Monoscope section
Measurement Point	Check on the LCD display
Measuring Instrument	
Adjustment Page	D
Adjustment Address	89 (COM)
Specified Value	Minimum flicker

Adjusting method:

- 1) Play back the monoscope section of the LP alignment tape, and press the PAUSE button.
- 2) Release the protect with the adjusting remote commander.
Page: 1, address: 00, data: 01
- 3) Change the data of page: D, address: 89, and minimize the flicker of the LCD display.
- 4) Press the PAUSE button of the adjusting remote commander.

14. White balance adjustment (RG-26 board)

Mode	POWER ON
Signal	Color bar signal whose chroma and burst signals are turned off
Measurement Point	Check on the LCD display
Measuring Instrument	
Adjustment Page	D
Adjustment Address	84 (R BRT), 86 (B BRT)
Specified Value	The display should not be colored

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Check that the LCD display is not colored. If it is, change the data of address: 84 and address: 86 of page: D, and adjustment the display is not colored.
- 3) Press the PAUSE button of the adjusting remote commander.

15. Character position adjustment (RG-26 board)

Mode	POWER ON
Signal	Arbitrary
Measurement Point	Check on the LCD display
Measuring Instrument	
Adjusting Element	CV901
Specified Value	A=B

Adjusting method:

- 1) Press the MENU button, and set the menu display.
- 2) Select "BILINGUAL".
- 3) Adjust A=B with CV901.

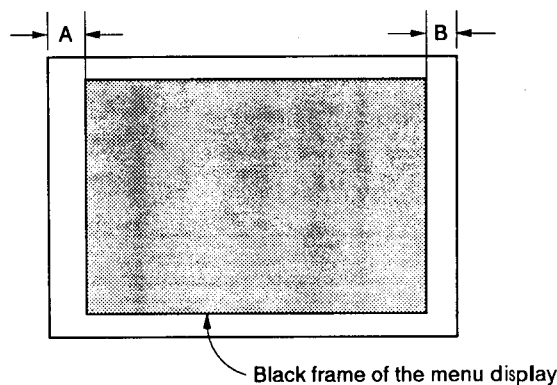


Fig. 8-37.

8-7. AUDIO SYSTEM ADJUSTMENTS

- Adjust using the color bar signal as the video signal input.

- Set the following modes at the menu display.

BILINGUAL MAIN/SUB

SOUND..... NORMAL

REC MODE SP

LINE AUDIO STEREO

PB SYSTEM PAL

ST MONITOR (Note 1).... STEREO

Note 1: Displayed on the menu display when the AFM stereo tape is played back.

[Connecting the measuring equipments for audio]

In addition to the measuring equipments for the video system, connect the measuring equipments for the audio system as shown in Fig. 8-38, and adjust with the power supply switch at "VTR ON" mode.

Note: 1) When inputting the audio signal, input the same signal to both the L and R channels, unless specified otherwise.

- 2) Be sure to insert the plug (shorting plug or dummy plug, etc.) into the audio input/output terminal (right). If the plug is not inserted, the monaural mode will be set, and correct adjustments cannot be carried out. (Monaural mode)

During recording ... The REC AFM RF 1.7 MHz carrier will not be output.

During playback The L+R signal will be output from the audio input/output terminal (left).

- 3) Adjustments for channel R in adjustments for both channels L and R are indicated in the [].**

[Adjusting Procedure]

- 1) E-E output level check
- 2) REC matrix L-R check
- 3) REC matrix L+R check
- 4) 1.5 MHz carrier frequency adjustment
- 5) 1.7 MHz carrier frequency adjustment
- 6) 1.5 MHz record level check
- 7) 1.7 MHz record level check
- 8) 1.5 MHz playback level adjustment
- 9) 1.7 MHz playback level adjustment
- 10) 1.5 MHz deviation adjustment
- 11) 1.7 MHz deviation adjustment
- 12) Stereo/bilingual automatic discrimination check
- 13) Overall level characteristics, distortion rate check
- 14) Separation check
- 15) Overall noise level check

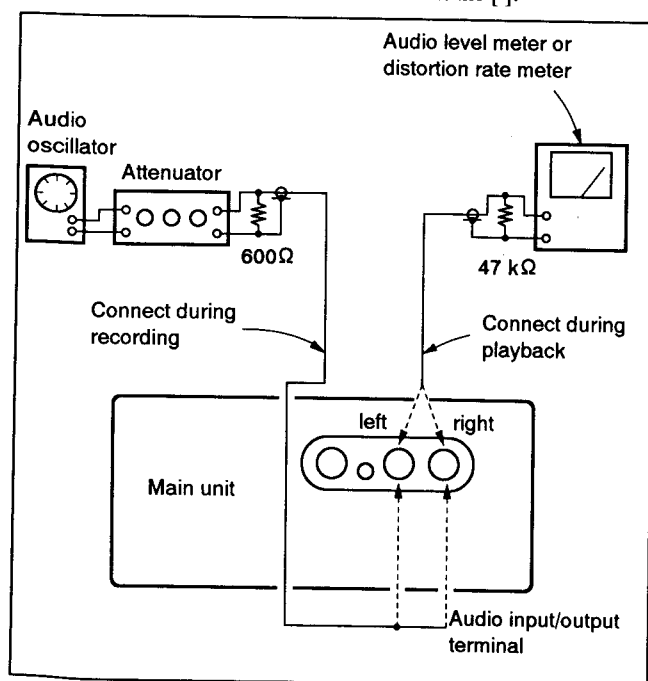


Fig. 8-38.

1. E-E output level check (AU-147 board)

Mode	Record
Signal	400 Hz, -7.5 dBs audio input terminal (right [left])
Measurement Point	Pin ⑪ of IC404 [Pin ⑪ of IC406]
Measuring Instrument	Oscilloscope or audio level meter
Specified Value	925^{+240}_{-190} mVp-p (-7.5 ± 2 dBs)

Checking method:

- 1) Check that the 400 Hz signal level satisfies the specification.

2. REC matrix L-R check (AU-147 board)

Mode	E-E
Signal	400 Hz, -7.5 dBs Input to both left and right audio input terminals
Measurement Point	Pin ⑦ of IC403
Measuring Instrument	Oscilloscope (Use 1: 1 probe)
Specified Value	0 ± 2 mVp-p

Checking method:

- 1) Input a 400 Hz, -7.5 dBs signal only to the right audio input terminal.
- 2) Check that the signal level of Pin ⑦ of IC403 is approximately 120 mVp-p.
- 3) Input a 400 Hz, -7.5 dBs signal to both the right and left audio input terminals.
- 4) Check that the signal level of Pin ⑦ of IC403 is 0 ± 2 mVp-p. (Note: Remove the video signal input)

3. REC matrix L+R check (AU-147 board)

Mode	Record
Signal	1. 400 Hz, -7.5 dBs: Audio input terminal (left) No signal: Audio input terminal (right) 2. No signal: Audio input terminal (left) 400 Hz, -7.5 dBs: Audio input terminal (right)
Measurement Point	Pin ① of IC403
Measuring Instrument	Oscilloscope
Specified Value	Level difference should be 0 ± 5 mVp-p when input only to the left terminal, and when input only to the right terminal.

Adjusting method:

- 1) Input the 400 Hz, -7.5 dBs signal only to the left audio input terminal. (Insert the shorting plug in the right audio input terminal.)
- 2) Read the 400 Hz signal level of Pin ① of IC403, and note it down. (Approx. 120 mVp-p)
- 3) Input the 400 Hz, -7.5 dBs signal only to the right audio input terminal. (Insert the shorting plug in the left audio input terminal.)
- 4) Check that the 400 Hz signal level of Pin ① of IC403 (value noted at step 2) is ± 5 mVp-p.

4. 1.5 MHz carrier frequency adjustment (AU-147 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑨ of IC401 (1.5M CAR OUT)
Measuring Instrument	Frequency counter (Note)
Adjustment Page	D
Adjustment Address	7A (1.5 IR)
Specified Value	1.500 ± 0.003 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 7A, and adjust the carrier frequency to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

5. 1.7 MHz carrier frequency adjustment (AU-147 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ② of IC401 (1.7M CAR OUT)
Measuring Instrument	Frequency counter (Note)
Adjustment Page	D
Adjustment Address	7C (1.7 IR)
Specified Value	1.700 ± 0.003 MHz

Note: Use a high impedance (above $1\text{ M}\Omega$), and low capacity (below 20 pF) probe.

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 7C, and adjust the carrier frequency to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

6. 1.5 MHz carrier level check (AU-147 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ⑦ of IC401 (1.5M CAR OUT)
Measuring Instrument	Oscilloscope
Specified Value	$A=450 \pm 50\text{ mVp-p}$

Checking method:

- 1) Check that the 1.5 MHz carrier level satisfies the specified value.

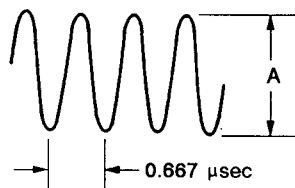


Fig. 8-39.

7. 1.7 MHz carrier level check (AU-147 board)

Mode	Record
Signal	No signal
Measurement Point	Pin ② of IC401 (1.7M CAR OUT)
Measuring Instrument	Oscilloscope
Specified Value	$420 \pm 50\text{ mVp-p}$

Checking method:

- 1) Check that the 1.7 MHz carrier level satisfies the specified value.

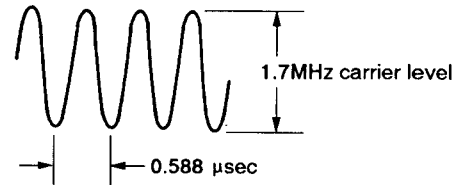


Fig. 8-40.

8. 1.5 MHz playback level adjustment

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	Left or right audio output terminal
Measuring Instrument	Audio level meter
Adjustment Page	D
Adjustment Address	78 (1.5 DEV PB)
Specified Value	$-7.5 \pm 0.5\text{ dBs}$

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 78, and adjust the 400 Hz signal level to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander.

9. 1.7 MHz playback level adjustment

Mode	Playback
Signal	Alignment tape: For checking AFM stereo operations (WR5-9CS) Stereo (color bar) section
Measurement Point	Audio output terminal (right)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	79 (1.7 DEV PB)
Specified Value	Minimum 400 Hz crosstalk component

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Change the data of page: D, address: 79, and minimize the 400 Hz crosstalk component.
- 3) Press the PAUSE button of the adjusting remote commander.

10. 1.5 MHz deviation adjustment

Mode	Bilingual mode record and playback
Signal	400 Hz, -7.5 dBs
Measurement Point	Audio input/output terminal (left)
Measuring Instrument	Audio level meter
Adjustment Page	D
Adjustment Address	7B (1.5 DEV REC)
Specified Value	-7.5 ± 0.5 dBs

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Input the 400 Hz, -7.5 dBs signal only to the left audio input terminal.
(Insert a shorting plug in the right audio input terminal.)
- 3) Record the signal in the bilingual mode.
(Select "BILINGUAL" of "LINE AUDIO" on the menu display.)
- 4) Remove the input signal.
- 5) Play back the recorded section.
- 6) Select "MAIN" of "BILINGUAL" on the menu display.
- 7) Check that the playback signal level satisfies the specified value.
- 8) If not, change the data of page: D, address: 7B and repeat steps 2) to 7).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When greater than the specified value	Decrease

- 9) Press the PAUSE button of the adjusting remote commander.

11. 1.7 MHz deviation adjustment

Mode	Bilingual mode record and playback
Signal	400 Hz, -7.5 dBs
Measurement Point	Audio input/output terminal (right)
Measuring Instrument	Audio level meter
Adjustment Page	D
Adjustment Address	7D (1.7 DEV REC)
Specified Value	-7.5 ± 0.5 dBs

Adjusting method:

- 1) Release the protect.
Page: 1, address: 00, data: 01
- 2) Input the 400 Hz, -7.5 dBs signal only to the right audio input terminal.
(Insert a shorting plug in the left audio input terminal.)
- 3) Record the signal in the bilingual mode.
(Select "BILINGUAL" of "LINE AUDIO" on the menu display.)
- 4) Remove the input signal.
- 5) Play back the recorded section.
- 6) Select "SUB" of "BILINGUAL" on the menu display.
- 7) Check that the playback signal level satisfies the specified value.
- 8) If not, change the data of page: D, address: 7D and repeat steps 2) to 7).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When greater than the specified value	Decrease

- 9) Press the PAUSE button of the adjusting remote commander.

12. Stereo/Bilingual automatic discrimination check

Mode	Playback
Signal	1. Stereo mode recorded tape (Note 1) 2. Bilingual mode recorded tape (Note 1) 3. Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	Check on the "stereo", "main", "sub" displays of the LCD screen
Measuring Instrument	

Note 1: Tapes recorded in the stereo or bilingual mode are made in the following way.
First, select "LINE AUDIO" on the menu display and set the input mode (stereo/bilingual).
Next, input any audio signal into the left and right audio line input terminals and record.
(Be sure to insert a plug in the right audio input terminal at this time.)

Checking method:

- 1) Play back the tape recorded in the stereo mode, and check that the "STEREO" characters are displayed on the LCD screen during the 5 seconds after tape start.
- 2) Play back the tape recorded in the bilingual mode and check that "MAIN", "SUB" or both "MAIN" and "SUB" are displayed on the LCD screen during the 5 seconds after tape start.
- 3) Play back the tape for checking alignment tape operations (WR5-5CSP) and check that neither "STEREO", "MAIN" nor "SUB" is displayed on the LCD screen.

13. Overall level characteristics distortion rate check

Mode	Self recording/playback
Signal	400 Hz, -7.5 dBs: Audio input terminal (left [right]) No signal: Audio input terminal (right [left])
Measurement Point	Audio output terminal (left [right])
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: -7.5 ± 2 dBs Distortion rate: Below 1.2% (Note 2)

Note: 1) [] contains points to be measured when checking the right channel.

2) Value when the following filter is used

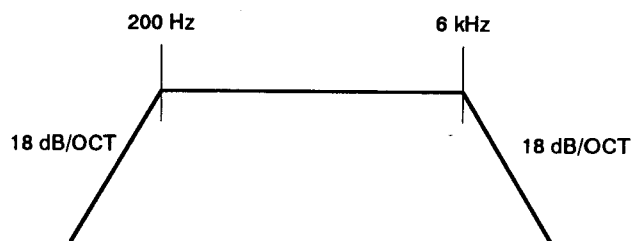


Fig. 8-41.

Checking method:

- 1) Input the 400 Hz, -7.5 dBs signal only to the left audio input terminal [right].
Note: Be sure to insert the shorting plug in the terminal without any signal input.
- 2) Record the signal.
- 3) Remove the input signal.
- 4) Play back the recorded section.
- 5) Check that the 400 Hz signal level of the left audio output terminal [right] is -7.5 ± 2 dBs, and distortion rate is below 1.2% (Note 2).

14. Separation check

Mode	Self recording/playback
Signal	No signal: Audio input terminal (left [right]) 1 kHz, -7.5 dBs: Audio input terminal (right [left])
Measurement Point	Audio output terminal (left [right])
Measuring Instrument	Audio level meter (Use the IHF-A curve auditory correction filter)
Specified Value	Below -27.5 dBs

Note: [] contains points to be measured when checking the right channel.

Checking method:

- 1) Insert the shorting plug into the left audio input terminal [right], and input the 1 kHz, -7.5 dBs signal only to the right audio input terminal [left].
- 2) Record the signal.
- 3) Remove the input signal.
- 4) Play back the recorded section.
- 5) Check that the crosstalk (1 kHz) level of the left audio output terminal [right] is below -27.5 dBs.

15. Overall noise level check

Mode	Self-recording
Signal	No signal: Audio input terminal (left and right)
Measurement Point	Audio output terminal (left [right])
Measuring Instrument	Audio level meter (Use the IHF-A curve auditory correction filter)
Specified Value	Below -63.0 dBs

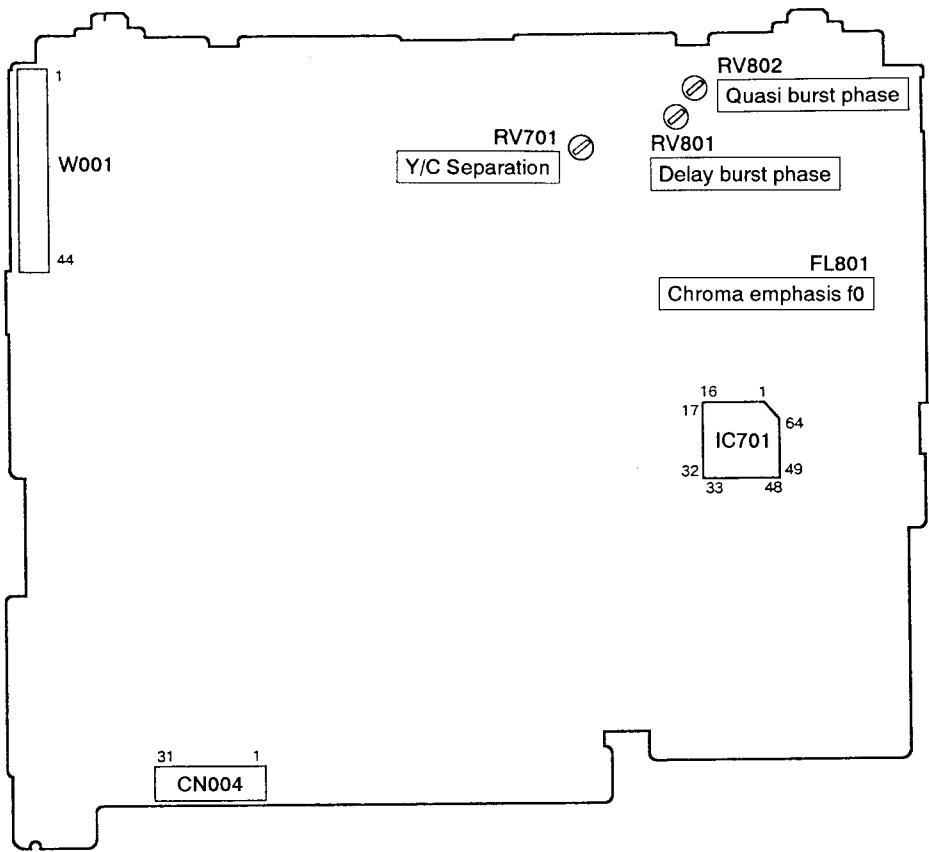
Note: [] contains points to be measured when checking the right channel.

Checking method:

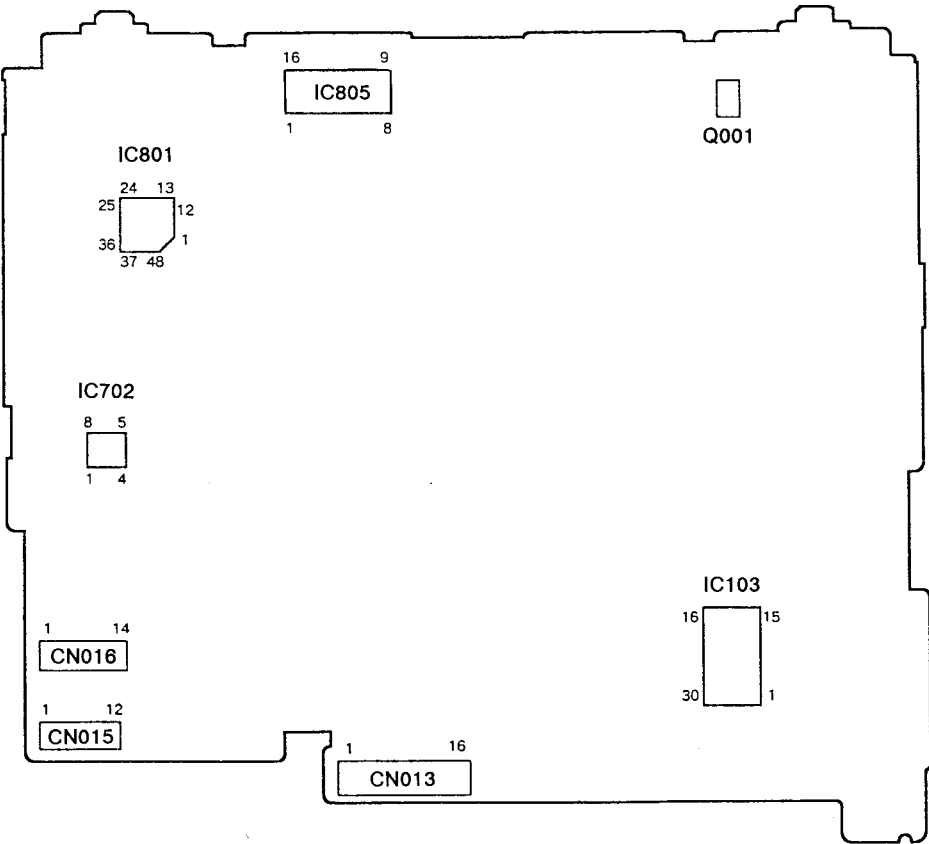
- 1) Insert the shorting plug in both the left and right audio input terminals.
- 2) Record.
- 3) Remove the shorting plug.
- 4) Play back the recorded section.
- 5) Check that the noise level of the left audio output terminal [right] is below -63.0 dBs.

8-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

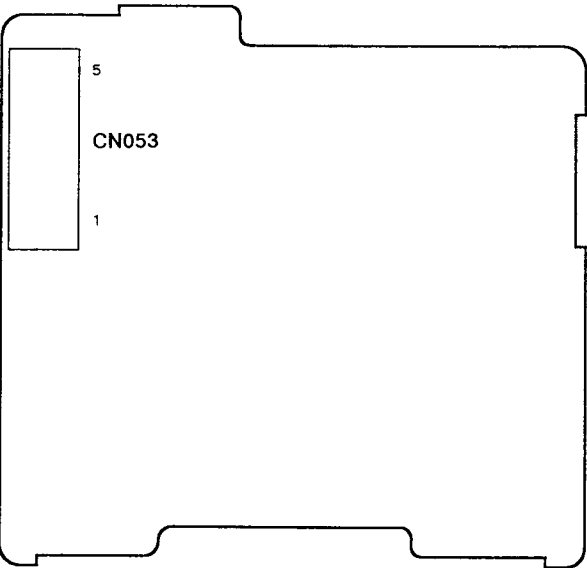
MA-165 BOARD (COMPONENT SIDE)



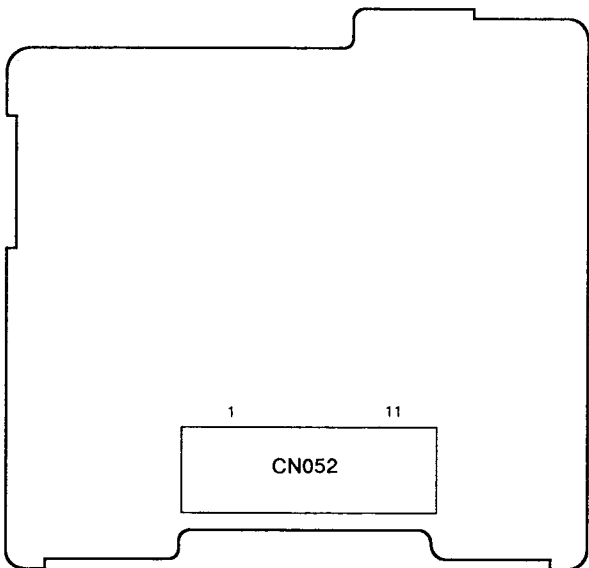
MA-165 BOARD (CONDUCTOR SIDE)



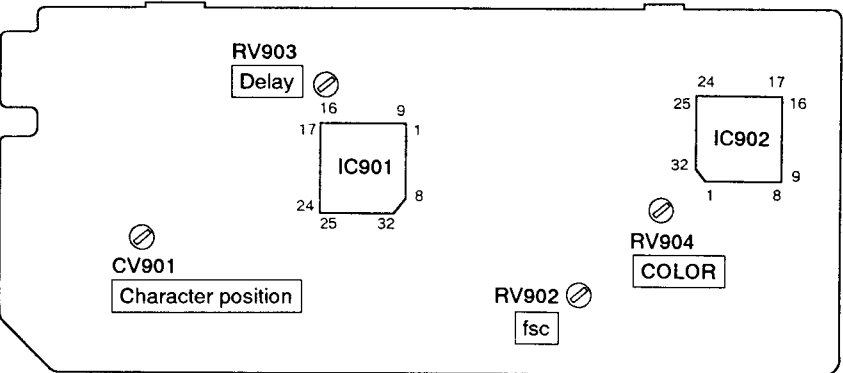
RP-152 BOARD (COMPONENT SIDE)



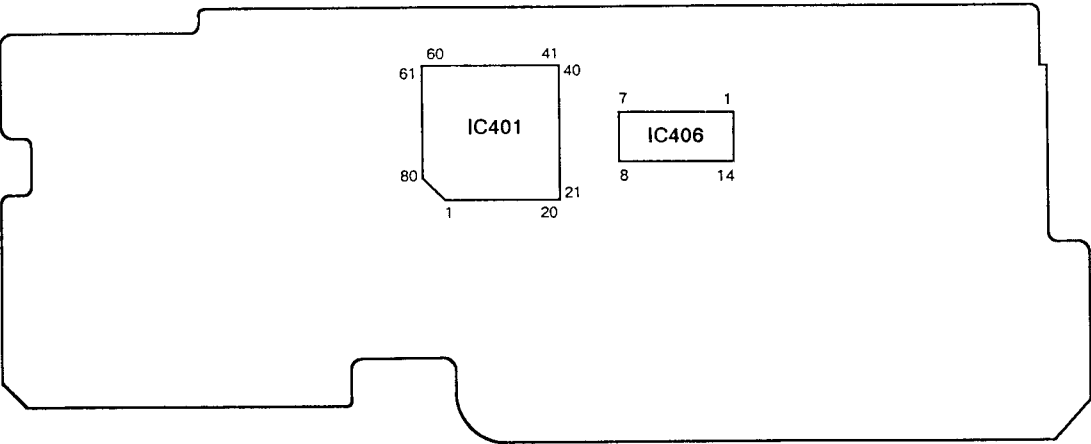
RP-152 BOARD (CONDUCTOR SIDE)



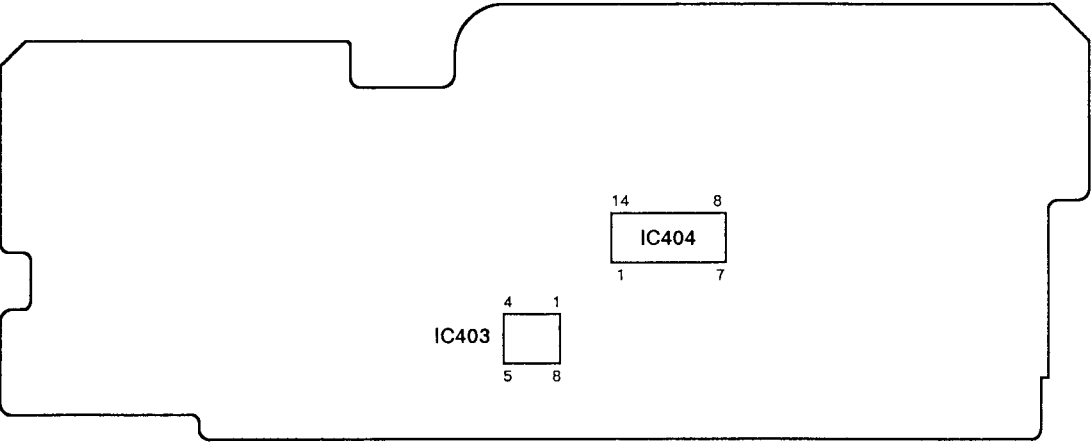
RG-26 BOARD (COMPONENT SIDE)



AU-147 BOARD (CONDUCTOR SIDE)



AU-147 BOARD (COMPONENT SIDE)



8 mm Video MECHANICAL ADJUSTMENT MANUAL IV

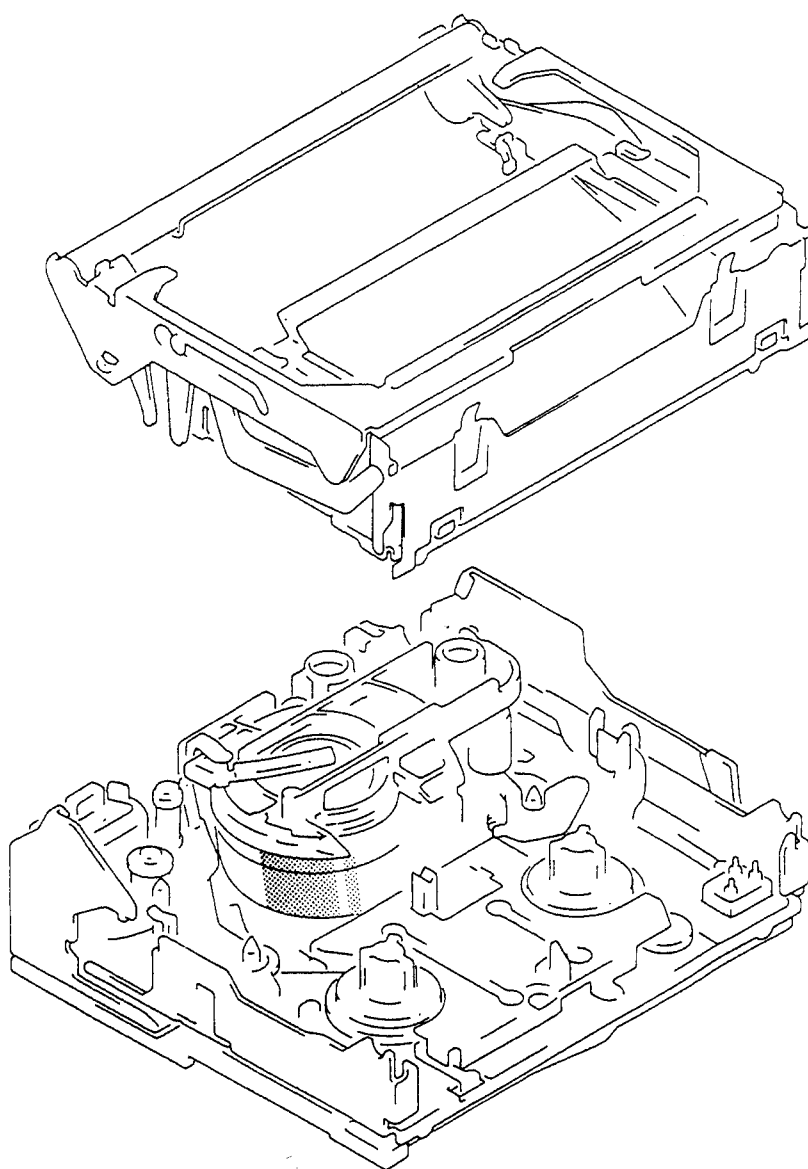


V12995

A MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER
SONY®

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>	<u>Section</u>	<u>Title</u>	<u>Page</u>
1.	PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT		3-10.	Supply Reel Table Assembly and TG-1 Arm Assembly	23
1-1.	Cassette compartment Assembly	3	3-11.	TG-2 Roller Assembly	24
1-2.	Operation with Cassette compartment Assembly Removed	5	3-12.	TG-7 Arm Assembly	25
1-3.	Handling of Mode Selector	6	3-13.	LM Motor Assembly	26
1-4.	Mode Selector Schematic Diagram	7	3-14.	LS Arm	27
1-5.	Mode Selector Parts List	7	3-15.	M Slider Assembly	28
2.	PERIODIC CHECK AND MAINTENANCE		3-16.	Pinch Press Arm Assembly	29
2-1.	Cleaning of Rotaly Drum Assembly	8	3-17.	Cam	30
2-2.	Cleaning of Tape Path	8	3-18.	GL Arm Assembly	31
2-3.	Periodic Check Items	9	3-19.	L Gear A and L Gear B	32
2-4.	Service Jigs List	10	3-20.	Relay Pulley and Change Gear Assembly	33
3.	MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT		3-21.	Rotary Upper Drum Replacement	34
3-1.	Retainer, Gooseneck Assembly	12	3-22.	Adjustment of Tension Regulator Position	35
3-2.	Protector Base Assembly	13	3-23.	FWD Back Tension Adjustment	35
3-3.	Drum Assembly	14	3-24.	Reel Torque Check	35
3-4.	Capstan Motor Assembly	15	4.	TAPE PATH ADJUSTMENT	
3-5.	Take-UP Reel Assembly and T-Soft Assembly	16	4-1.	Preparation for Adjustment	37
3-6.	Pinch Arm Assembly	17	4-2.	Tracking Adjustment	38
3-7.	LS Chassis Assembly	18	4-3.	No.2 Guide (TG-2) Adjustment	38
3-8.	Guide Base T Assembly and Guide Base S Assembly	20	4-3-1.	No.2 Guide (TG-2) Height Presetting	38
3-9.	Guide Arm T Assembly and Guide Arm S Assembly	22	4-3-2.	No.2 Guide (TG-2) Adjustment	39
			4-4.	No.7 Guide (TG-7) Adjustment	39
			4-5.	CUE and REW Waveform Check	39
			4-6.	Check After Adjustment	40
			4-6-1.	Tracking Check	40
			4-6-2.	Rising Check	40
			4-6-3.	Tape Path Check	40

Mechanical adjustment is done in the **USE** mode. (To select the **USE** mode, refer to "1-3, Handling of Mode Selector".)

1-1. CASSETTE COMPARTMENT ASSEMBLY

1. Removal (Fig. 1)

- 1) Select the **USE** mode.
- 2) Push the part **a** of lock arm **1** toward the arrow **A** to unlock from lock guide **2**, and raise the cassette compartment as shown in Fig. a.
- 3) Remove two screws **3** and remove the LS frame **4** toward the arrow **B**.
- 4) With the cassette compartment assembly **5** pushed in arrow **C** direction, distort tabs **b** and **c** of MD side plate toward the arrow **D** to disengage from catches **d** and **e** of cassette compartment assembly respectively.

In such a case, insert a screwdriver between MD side plate and catch and disengage the tab ⑤ first, then disengage the tab ③ for easy removal as shown in Fig. b.

- 5) Raise the cassette compartment assembly **5** in the opposite direction of arrow **C** until the shafts **1** and **8** are disengaged, and push left and right side plates toward arrow **D** to remove the cassette compartment assembly.

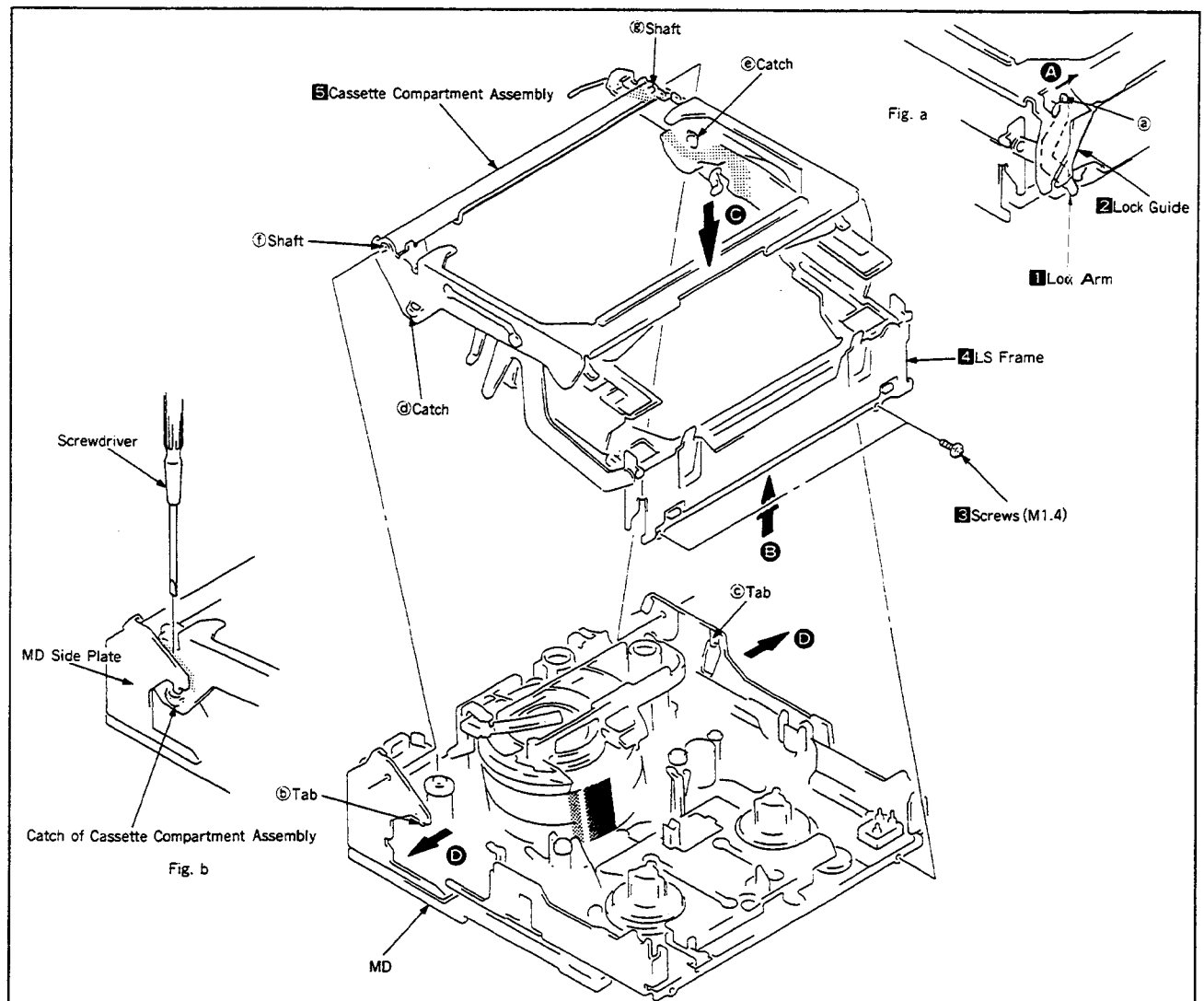


Fig. 1

2. Mounting (Fig. 2)

- 1) Select the **USE** mode.
- 2) Draw the cassette holder **6** of cassette compartment assembly **5** toward the arrow **E**, and lower the LS frame **4** toward the arrow **F**.
- 3) With the cassette compartment assembly **5** tilted by about 45° against MD, insert shafts **①** and **⑧** of cassette compartment assembly into holes **⑥** and **①** of MD side plate respectively.

At this time, the part ① of torsion bar must be positioned on the side ⑫ of LS flexible board (FP-443) (not on the side ①), as shown in Fig. c.

- 4) Holding holes ④ and ① of MD side plate, press the cassette compartment assembly ⑤ so that its catches ④ and ⑤ are

engaged with tabs **6** and **7** of MD side plate. In such a case, the lock arm **1** of cassette compartment assembly must be inserted into a groove in the guide rail **7** on the MD side plate as shown in Fig. d.

- 5) Insert left and right side plates **Ⓜ** and **Ⓝ** of LS frame **4** inside the LS chassis **8**.
- 6) Push down the cassette compartment to lock.

Note : Make sure that the shafts ①, ⑧ and the tabs ⑤, ⑥ are set in the MD side plate properly.

- 7) Tighten two screws **3**.

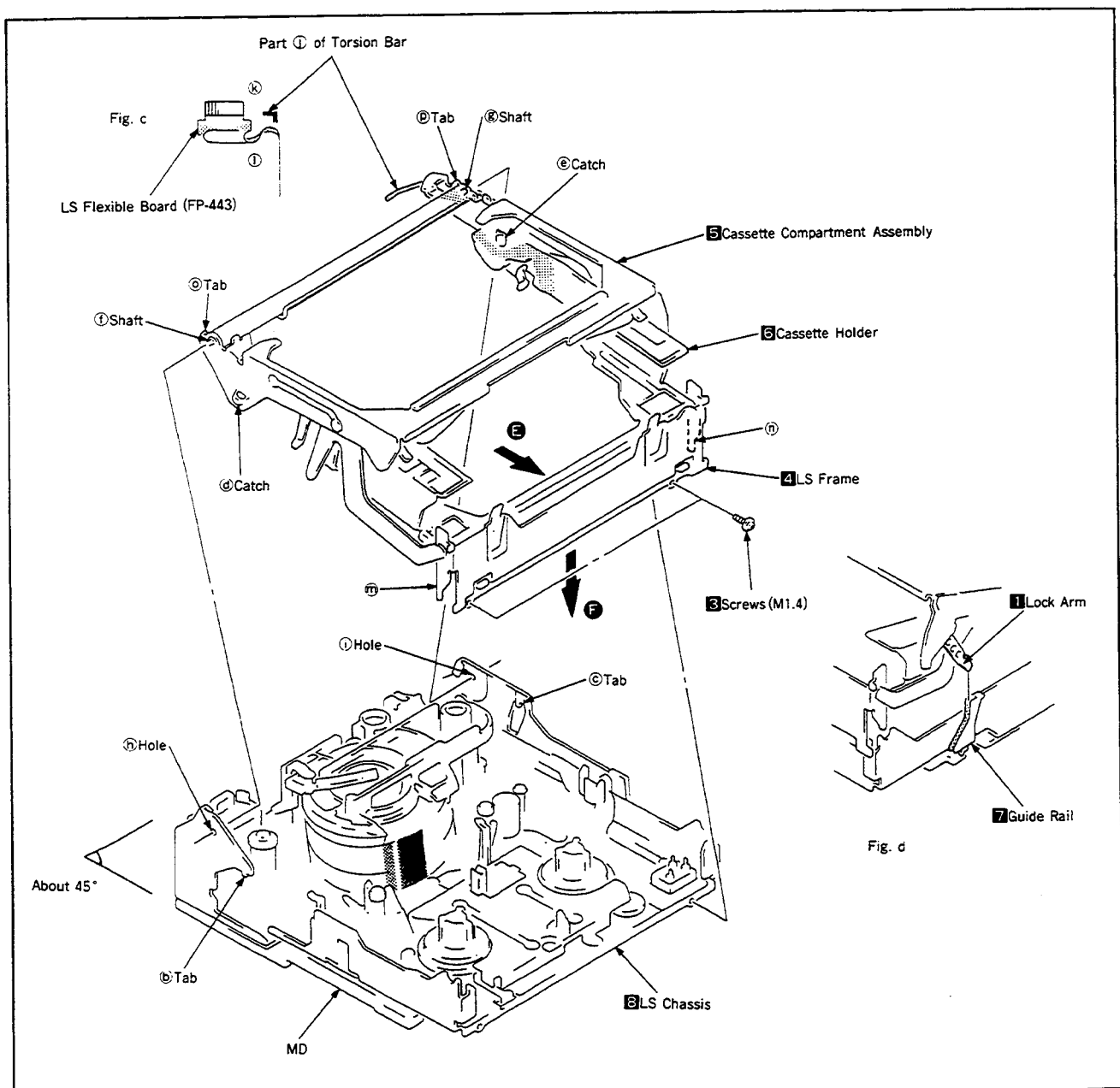


Fig. 2

**1-2. OPERATION WITH CASSETTE COMPARTMENT
ASSEMBLY REMOVED (Fig. 3)**

- 1) Referring to the Service Manual, supply power with the cabinet and camera removed. (Make the mechanical deck ready to operate.)
- 2) Place the cap **2** on the Reflector C **1**.
- 3) Press the pin of the push switch **3** (ON state) and fix it with adhesive tape **4** in that state.

Note : Press the asterisk (*) pin to set the REC mode.
(This is not required for the other modes.)

- 4) Push the cassette compartment DOWN switch **5** in an arrow direction as shown in Fig. a.

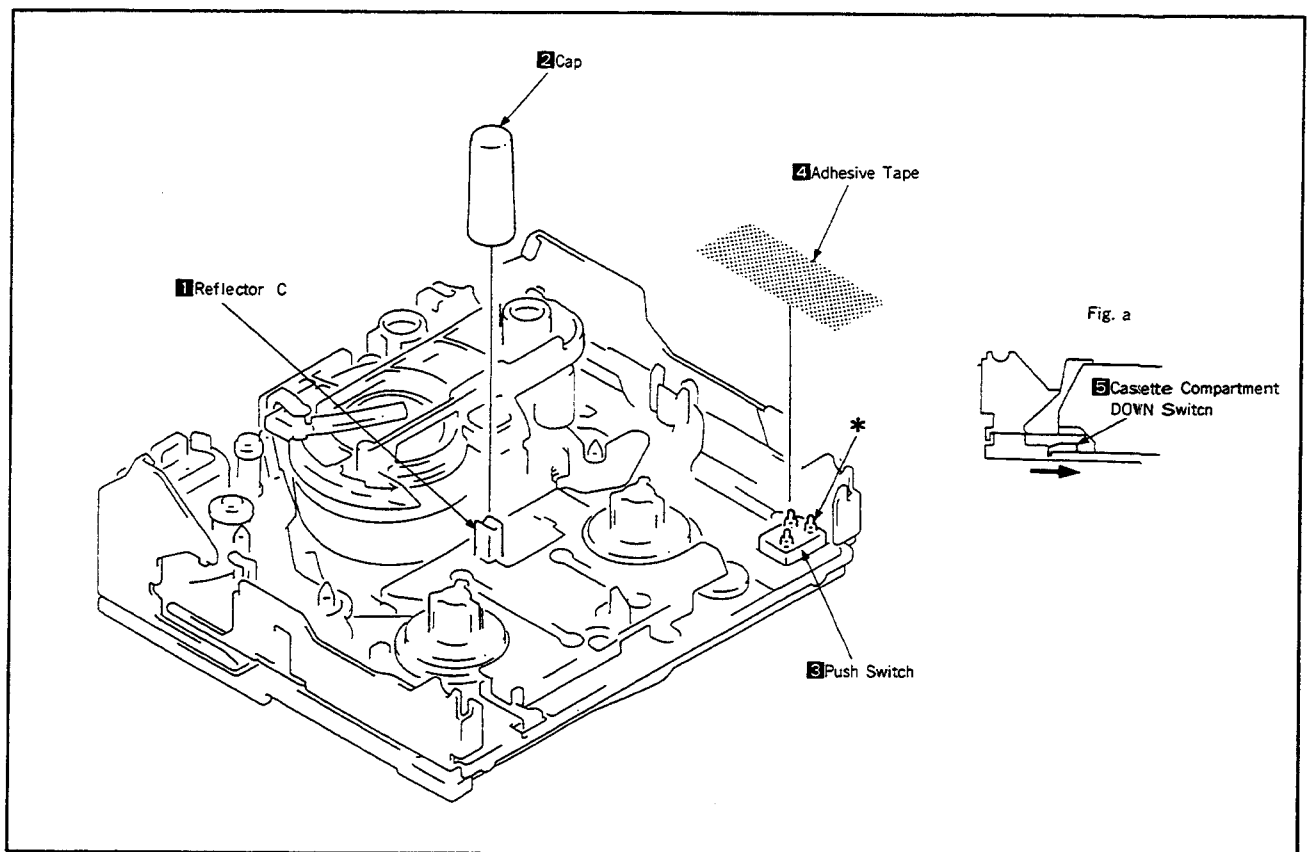


Fig. 3

1-3. HANDLING OF MODE SELECTOR

- Stick the MD process table label to the mode selector IV panel, then mount the panel on the mode selector.
U, U', FL, O, O' and A mechanisms have different mode indications respectively. Select your desired type. (Fig.4)

1 Construction (Fig.5)

2 Connection (Fig.6)

For CCD-FX410 series

- 1) Insert the FP-425 flexible connector **1** and M-SW connector **2** into the mode selector IV conversion connector **3** respectively.

3. Handling

- 1) Use the M mode selector buttons only.
- 2) During mode selection, "BLANK" lights up when no mode is being selected.
- 3) If the right M mode selector button is kept pressed, END, EJECT, USE, LOAD, READY, TURN, REC and FF light up in that order.
- 4) When changing over from the FF mode back to the END mode, press the left M mode selector button to select your desired mode.

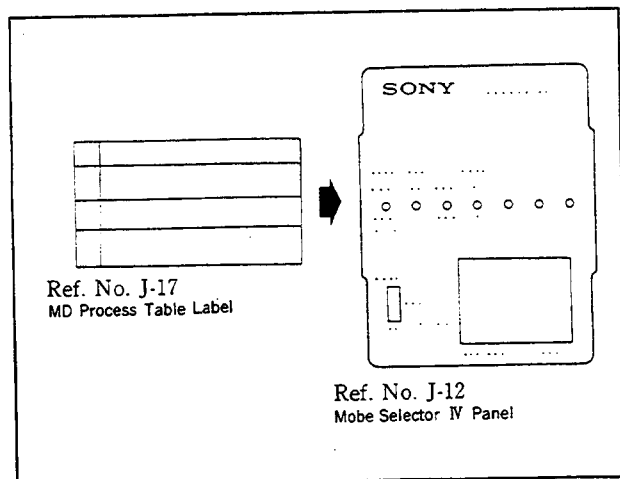


Fig. 4

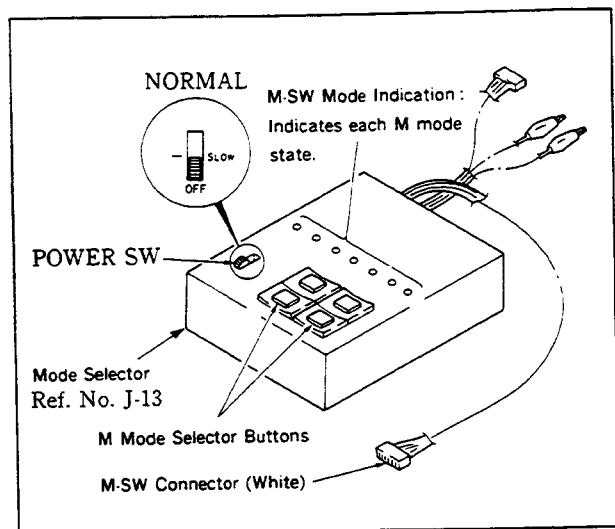


Fig. 5

For CCD-FX410 series

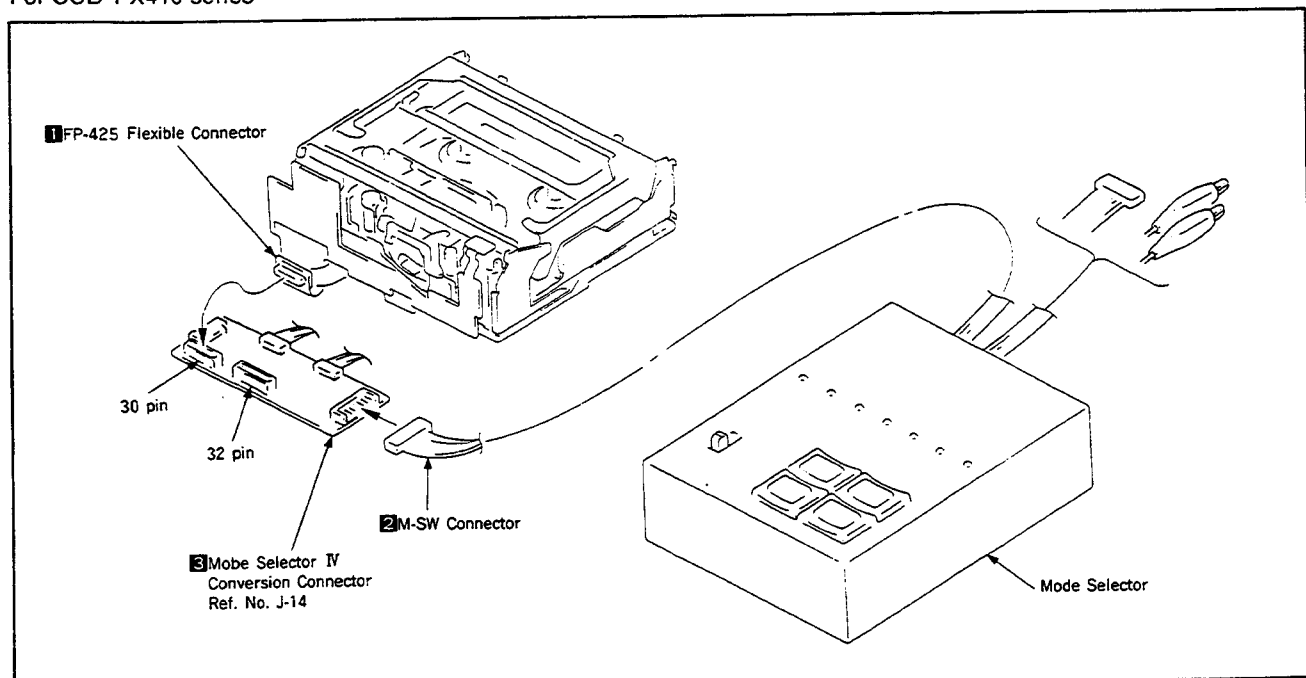
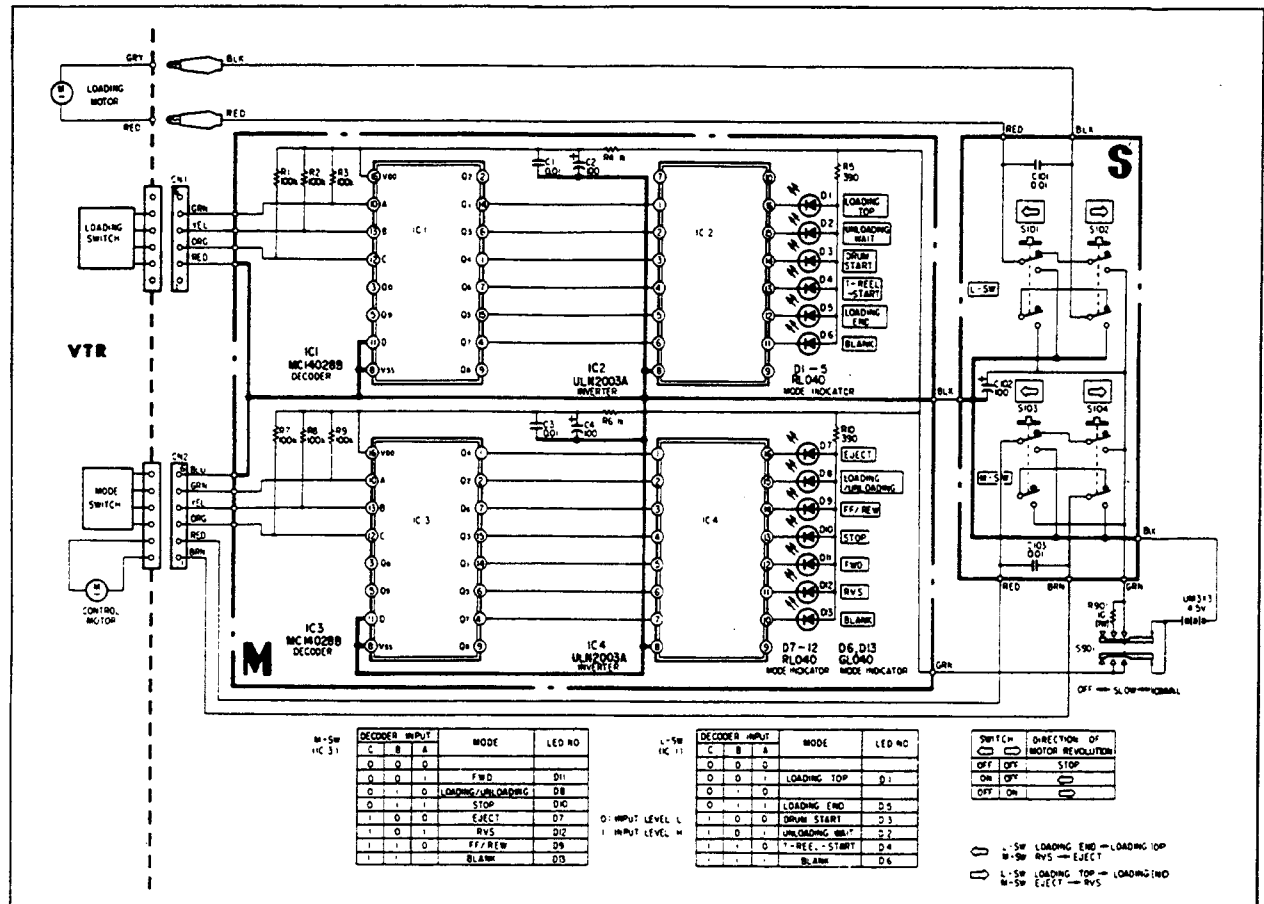


Fig. 6

1-4. MODE SELECTOR SCHEMATIC DIAGRAM



1-5. MODE SELECTOR PARTS LIST

Ref. No	Part No.	Description	Ref. No	Part No.	Description
CAPACITOR			IC		
C1	1-108-579-00	MILER 0.01 μ F 50V	IC1	8-752-240-28	IC TC4028BP
C2	1-123-333-00	ELECT 100 μ F 24V	IC2	8-752-120-03	IC μ PA2003C
C3	1-108-579-00	MILER 0.01 μ F 50V	IC3	8-759-240-28	IC TC4028BP
C4	1-123-333-00	ELECT 100 μ F 24V	IC4	8-759-120-03	IC μ PA2003C
C101	1-108-579-00	MILER 0.01 μ F 50V	RESISTOR		
C102	1-123-333-00	ELECT 100 μ F 24V	R1	1-247-179-00	CARBON 100K 1/4W
C103	1-108-579-00	MILER 0.01 μ F 50V	R2	1-247-179-00	CARBON 100K 1/4W
DIODE			R3	1-247-179-00	CARBON 100K 1/4W
D1	8-719-812-31	DIODE TLR123	R4	1-247-131-00	CARBON 1K 1/4W
D2	8-719-812-31	DIODE TLR123	R5	1-247-121-00	CARBON 390 1/4W
D3	8-719-812-31	DIODE TLR123	R6	1-247-131-00	CARBON 1K 1/4W
D4	8-719-812-31	DIODE TLR123	R7	1-247-179-00	CARBON 100K 1/4W
D5	8-719-812-31	DIODE TLR123	R8	1-247-179-00	CARBON 100K 1/4W
D6	8-719-812-33	DIODE TLG123A	R9	1-247-179-00	CARBON 100K 1/4W
D7	8-719-812-31	DIODE TLR123	R10	1-247-121-00	CARBON 390 1/4W
D8	8-719-812-31	DIODE TLR123	R901	1-214-594-00	METAL 10 1W
D9	8-719-812-31	DIODE TLR123			
D10	8-719-812-31	DIODE TLR123			
D11	8-719-812-31	DIODE TLR123			
D12	8-719-812-31	DIODE TLR123			
D13	8-719-812-33	DIODE TLG123A			

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regardless of the length of use.

2-1. CLEANING OF ROTARY DRUM ASSEMBLY

- Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquid (Ref. No. J-1) to the rotary drum assembly. Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a perpendicular direction to the it. make sure to follow the instructions above for cleaning the rotary drum assembly.

2-2. CLEANING OF TAPE PATH (Fig.7)

- In the **USE** mode, clean the tape running system (TG - 1,- 2,- 3,- 4,- 5, - 6, - 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

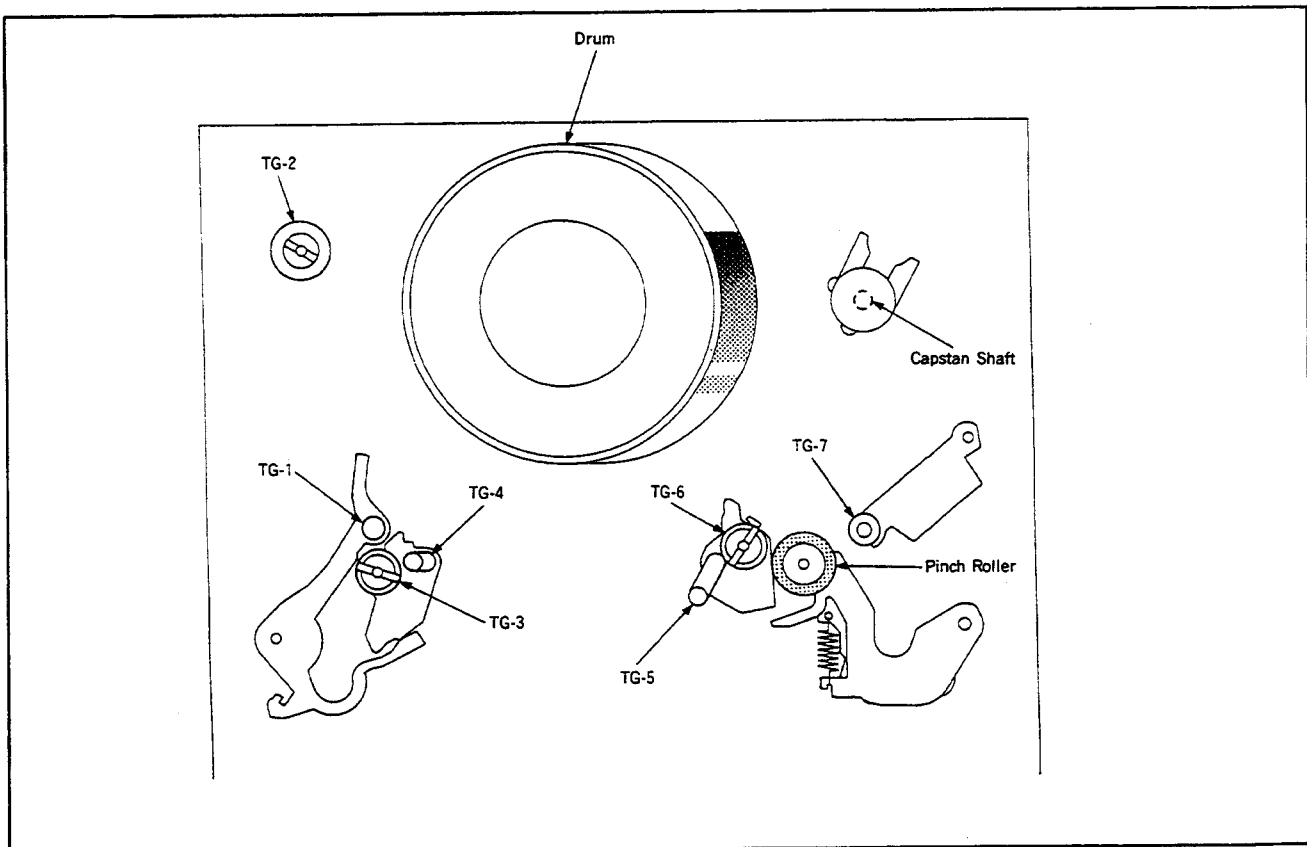


Fig. 7

2-3. PERILDIC CHECK ITEMS

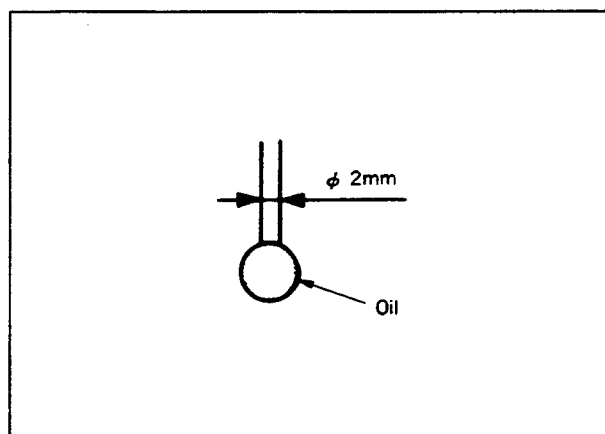
Location of Maintenance and check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans- portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degausing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-944-539-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be absolutely careful not to get oil on the tape path surface.
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	A-7040-304-A
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

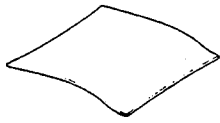
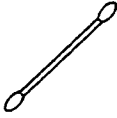
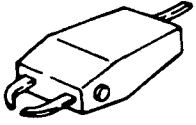
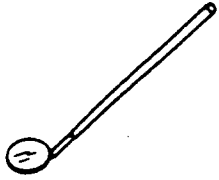
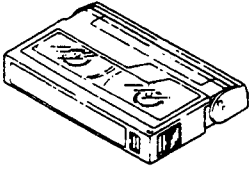
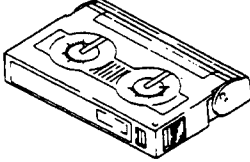
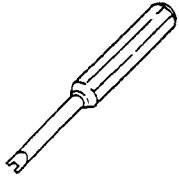
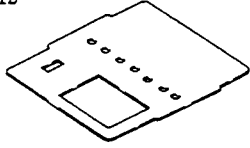
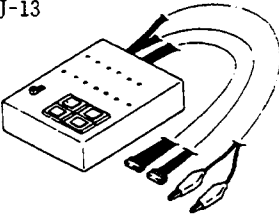
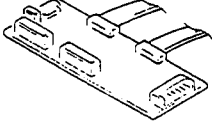
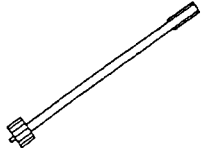
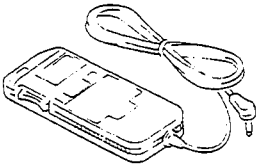
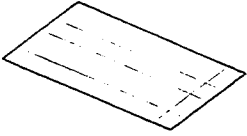
- Be sure to use specified oil. (If you use oil with different viscosity, etc., it may cause troubles.)
Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT - 68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.



2-4. Service jigs list

Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector IV panel	J-6082-105-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector IV conversion connector	J-6082-167-A		
J-15	FWD B.T. adjusting driver	J-6082-182-A		
J-16	Adjusting remote controller	J-6082-053-B		Tape path (Setting of PATH mode)
J-17	MD process table label	J-6082-166-A		

Other equipment ● Oscilloscope
 ● Analog tester (20 kΩ)

J-1 	J-2 	J-3 	J-4 
J-5 	J-6 	J-9 	J-10  (Attached to the maintenance rotary upper drum)
J-11 	J-12 	J-13 	J-14 
J-15 	J-16 	J-17 	

3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-13) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1. RETAINER, GOOSENECK ASSEMBLY (Fig. 8)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Remove a screw **1**.
- 3) Remove the Retainer, Gooseneck assembly **2**.

2. Mounting

- 1) Mount the Retainer, Gooseneck assembly **2** with its two tabs and holes of LS chassis engaged with its hole and a boss of LS chassis.
- 2) Tighten the screw **1**.
- 3) Referring to 1-1, mount the cassette compartment assembly.

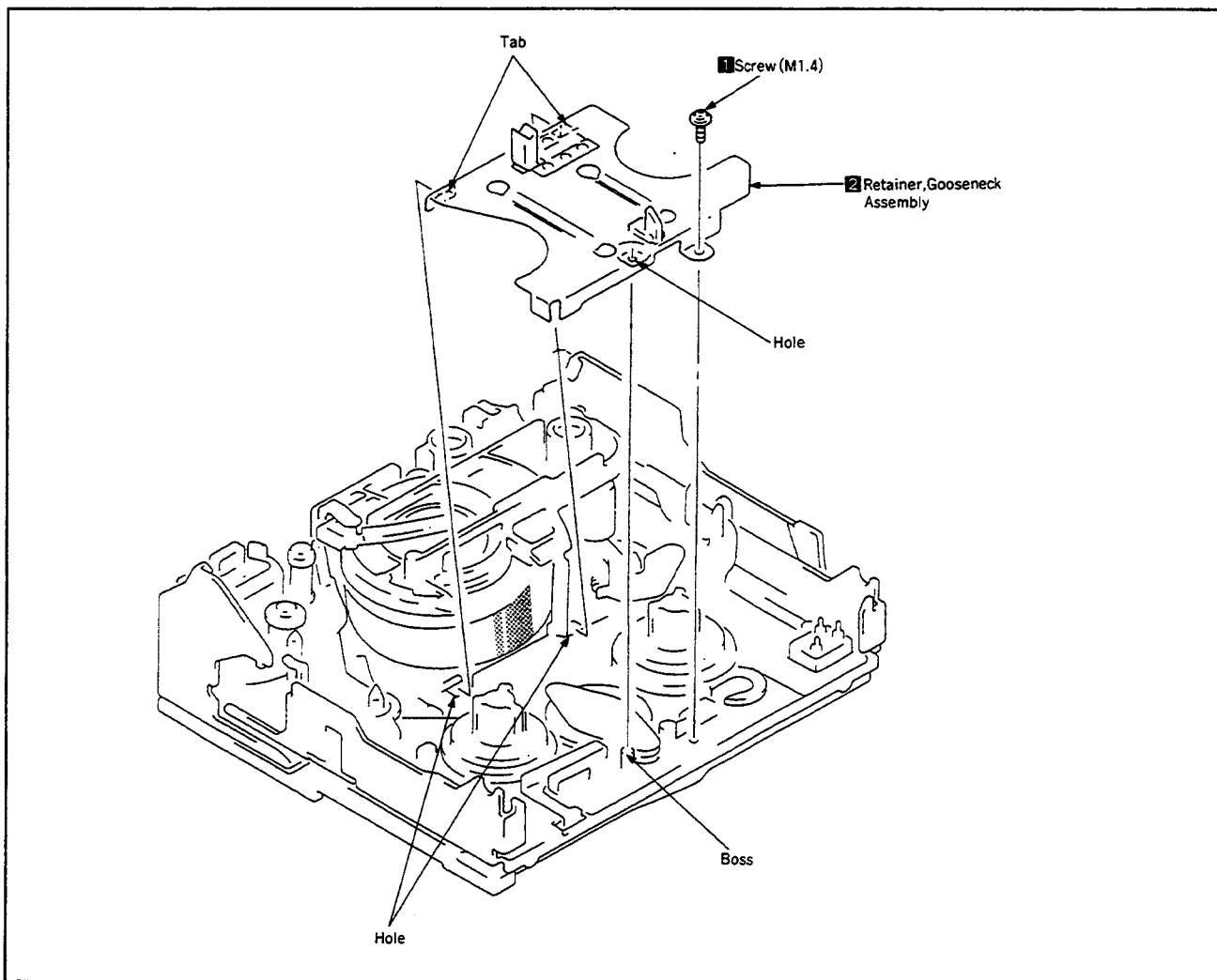


Fig. 8

3-2. PROTECTOR BASE ASSEMBLY (Fig. 9)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Remove two screws **1**, then the protector base assembly **2**.

2. Mounting

- 1) Mount the protector base assembly **2** with its three holes engaged with two dowels of mechanical chassis, and a dowel of TG-5 Base Holder **3**.
- 2) Tighten two screws **1**.
- 3) Referring to 1-1, mount the cassette compartment assembly.

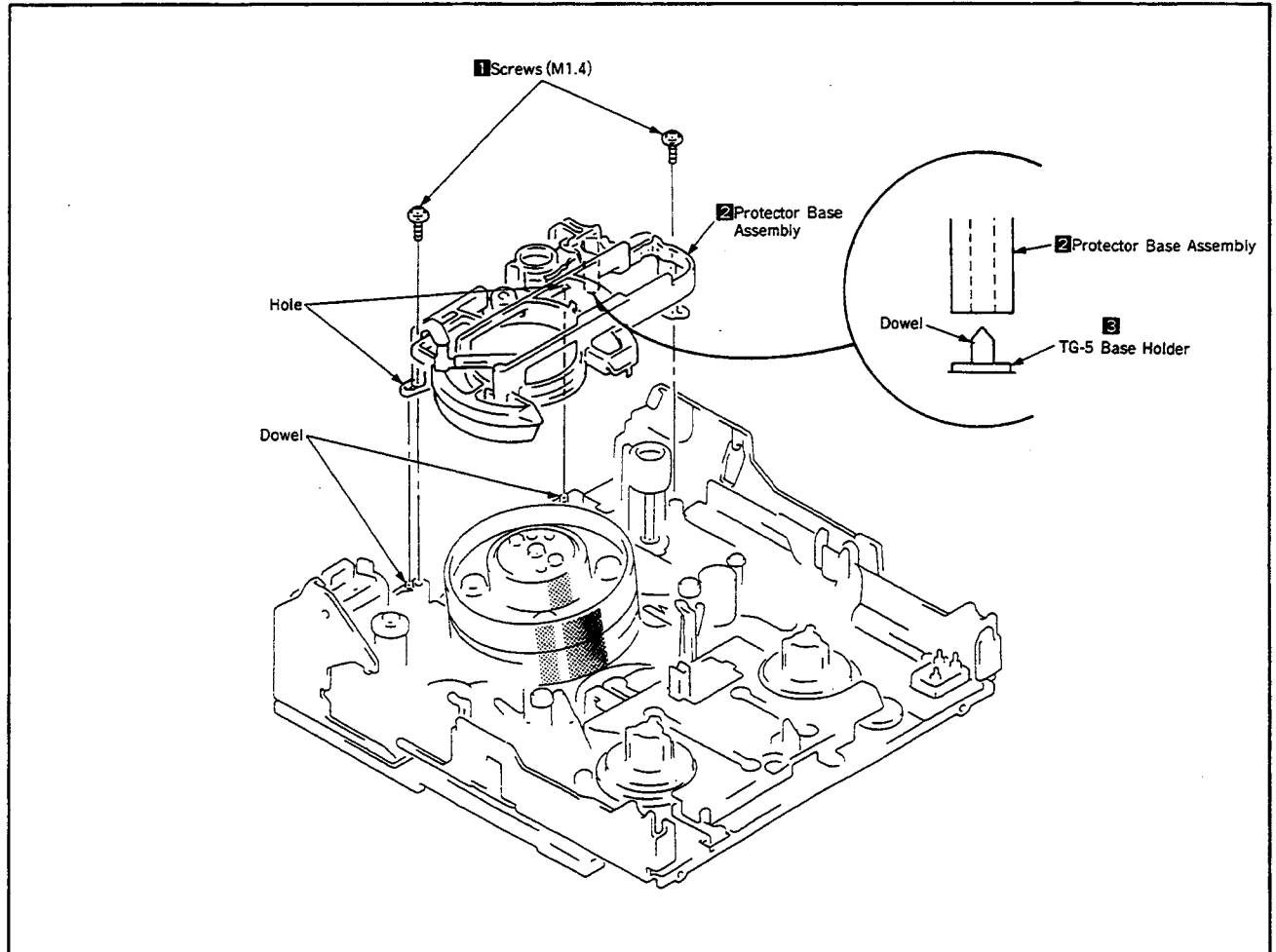


Fig. 9

3-3. DRUM ASSEMBLY (Fig. 10)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-2, remove the protect base assembly.
- 3) Disconnect the connector of FP-444 flexible board **1** on the back of MD.
- 4) Remove three screw **2**, then the drum assembly **3**.

Note : Do not touch the outer surfaced of drum (hold portions **A** and **B** of drum).

2. Mounting

- 1) Mount the drum assembly **3** while aligning with two dowels **②** of chassis.

Note : Do not touch the outer surfaced of drum (hold portions **A** and **B** of drum).

- 2) Tighten three screw assemblies **2** in the order of 1, 2 and 3.

Note : Tighten lightly not to deform the drum lead.

- 3) Apply a screw locking agent to prevent screws from loosening.

Note : In tightening the screws, pushing down the drum extremely will allow the drum to float up.

- 4) Connect the connector of FP-444 flexible board **1** on the back of MD.

- 5) Referring to 3-2, mount the protect base assembly.

- 6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, make tape path adjustment in Section 4.

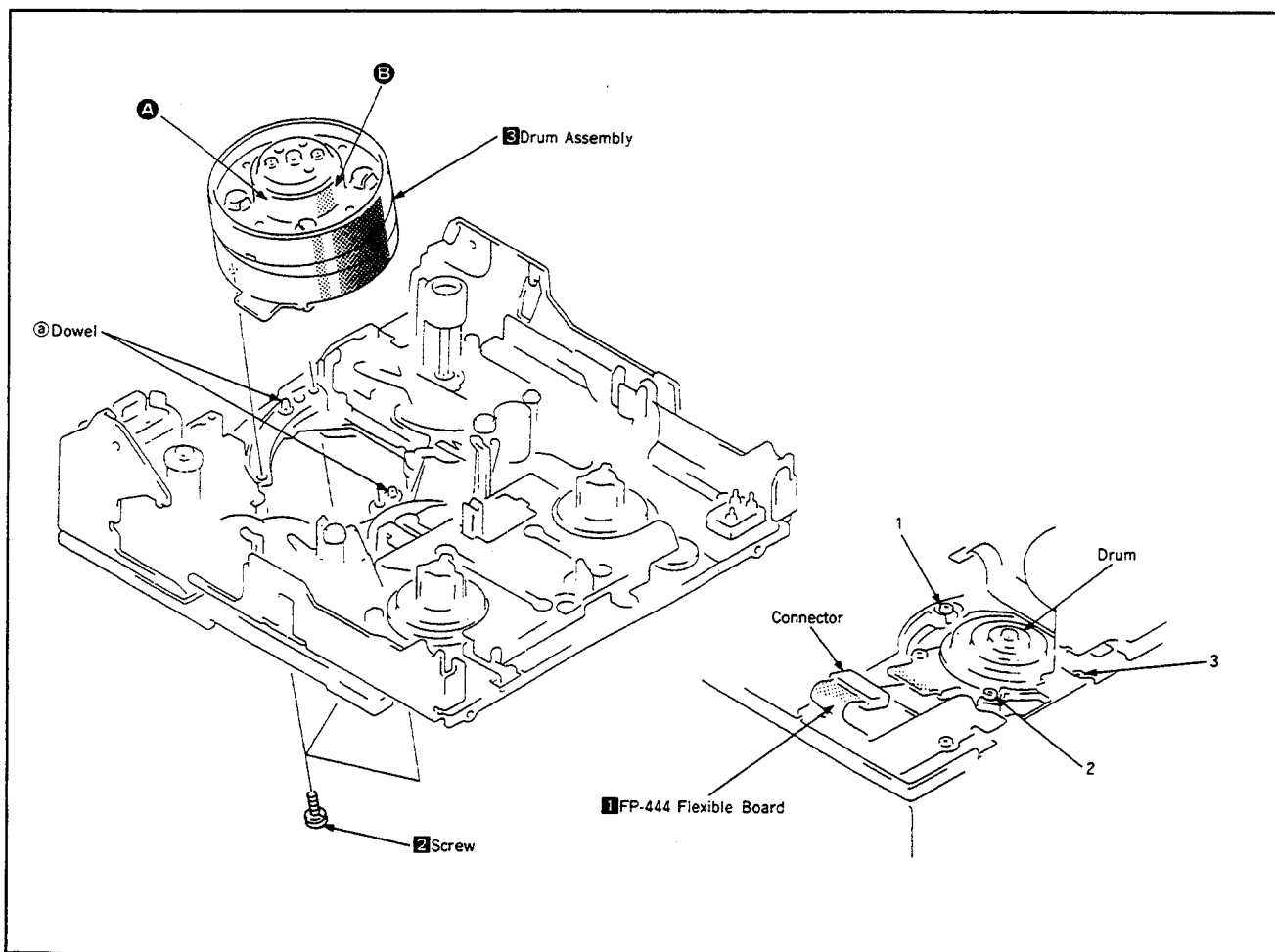


Fig. 10

3-4. CAPSTAN MOTOR ASSEMBLY (Fig. 11)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Remove two screw **1**, then the capstan cover **2**.
- 3) Remove the screw **3**, then the capstan motor assembly **4**.

2. Mounting

- 1) Mount the capstan motor assembly **4** and tighten the screw **3**.

Note : In mounting the capstan motor assembly, hold lightly the capstan motor assembly until the rotor gear aligns with the change gear Assy, then insert fully the assembly when both gears are engaged completely by manually rotating the rotor. (Take care not to damage the change gear Assy.)

- 2) Mount the capstan cover **2** and tighten two screws **1**.
- 3) Referring to 1-1, mount the cassette compartment assembly.

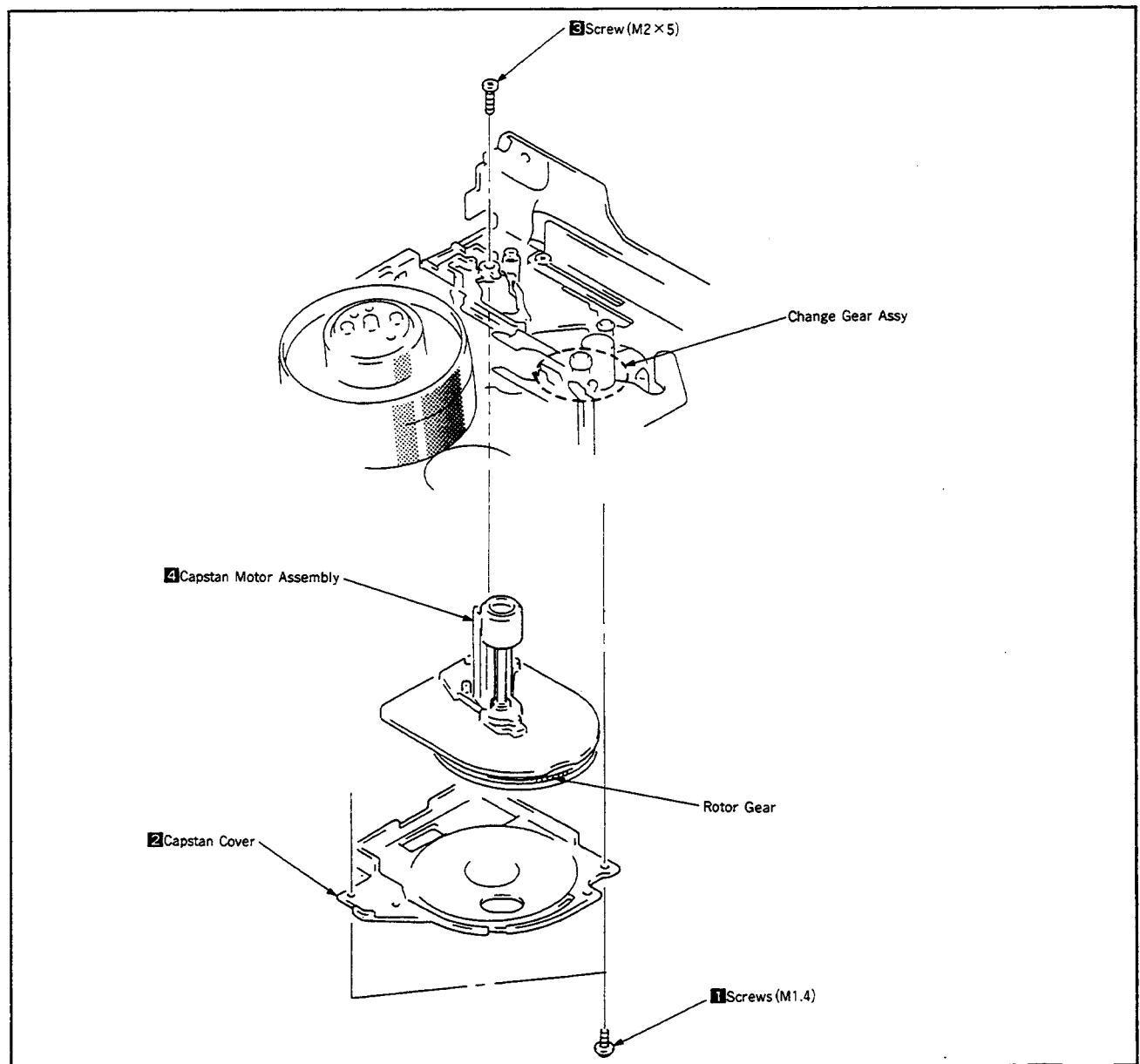


Fig. 11

3-5. TAKE-UP REEL TABLE ASSEMBLY AND T- SOFT ASSEMBLY (Fig. 12)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Remove the take-up reel table assembly **1**.
- 4) Remove the T soft assembly **2**, then the T soft arm **3**.

2. Mounting

- 1) Mount the T soft arm **3** with its long hole **©** engaged with the boss **④** of LS chassis.
- 2) Mount the T soft assembly **2** with its tab **③** engaged with a square hole **⑥** of T soft arm, as shown in Fig. a.
- 3) Mount the take-up reel table assembly **1** and rotate it toward the arrow **A** to be latched with T hard claw.
- 4) Referring to 3-1. mount the Retainer, Gooseneck assembly.
- 5) Referring to 1-1, mount the cassette compartment assembly.

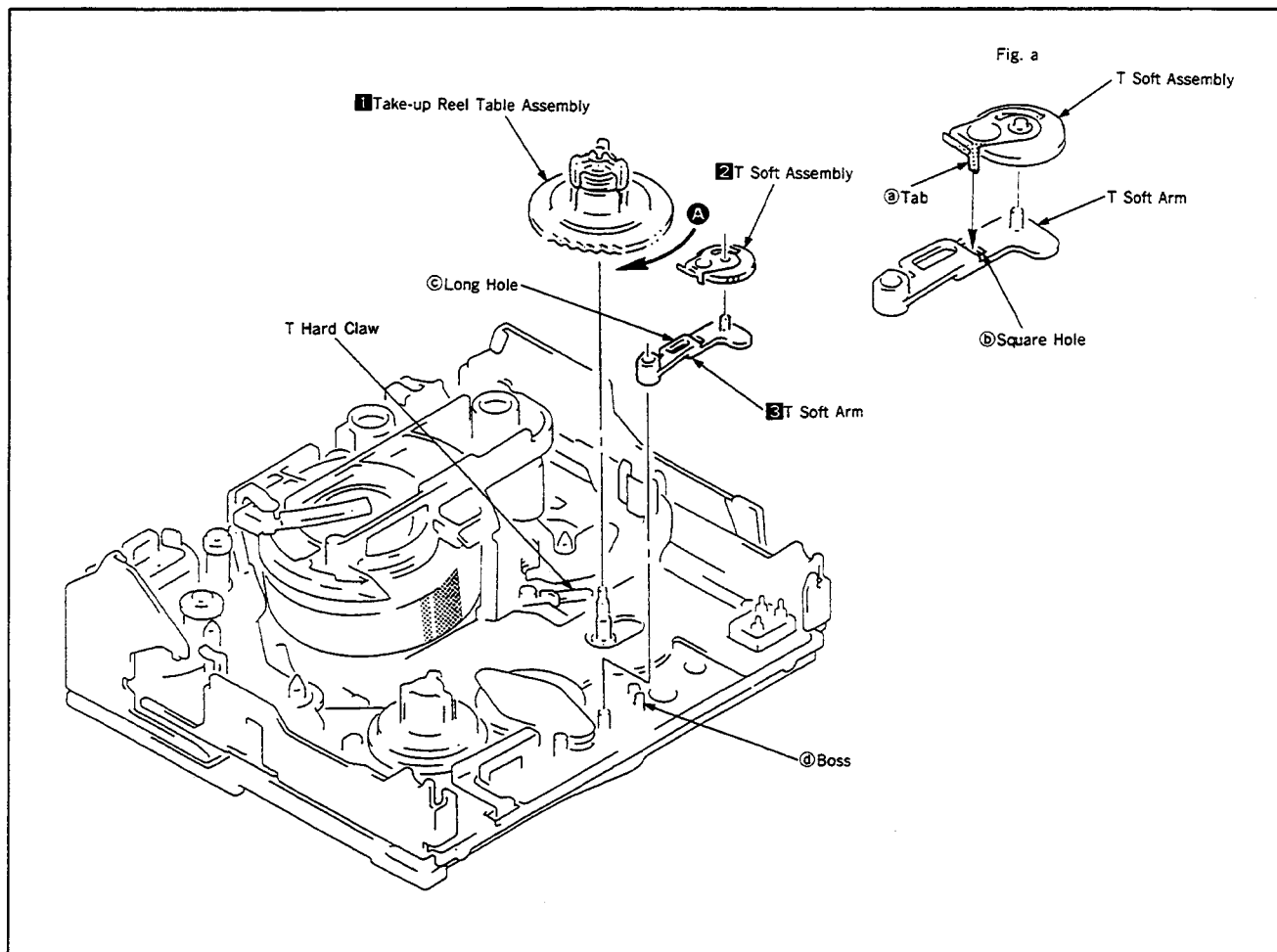


Fig. 12

3-6. PINCH ARM ASSEMBLY (Fig. 13)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Select the **READY** mode.
- 3) Remove a washer **1**, then the pinch arm assembly **2**.

2. Mounting

- 1) Select the **READY** mode.
- 2) Hooking a spring of pinch arm assembly **2** to the cassette positioning boss on the chassis, mount the pinch arm assembly on the shaft of LS chassis assembly as shown in Fig. a.
- 3) Push in the spring with tweezers up to the root of boss as shown in Fig. b.
- 4) Mount the washer **1**.
- 5) Referring to 1-1, mount the cassette compartment assembly.

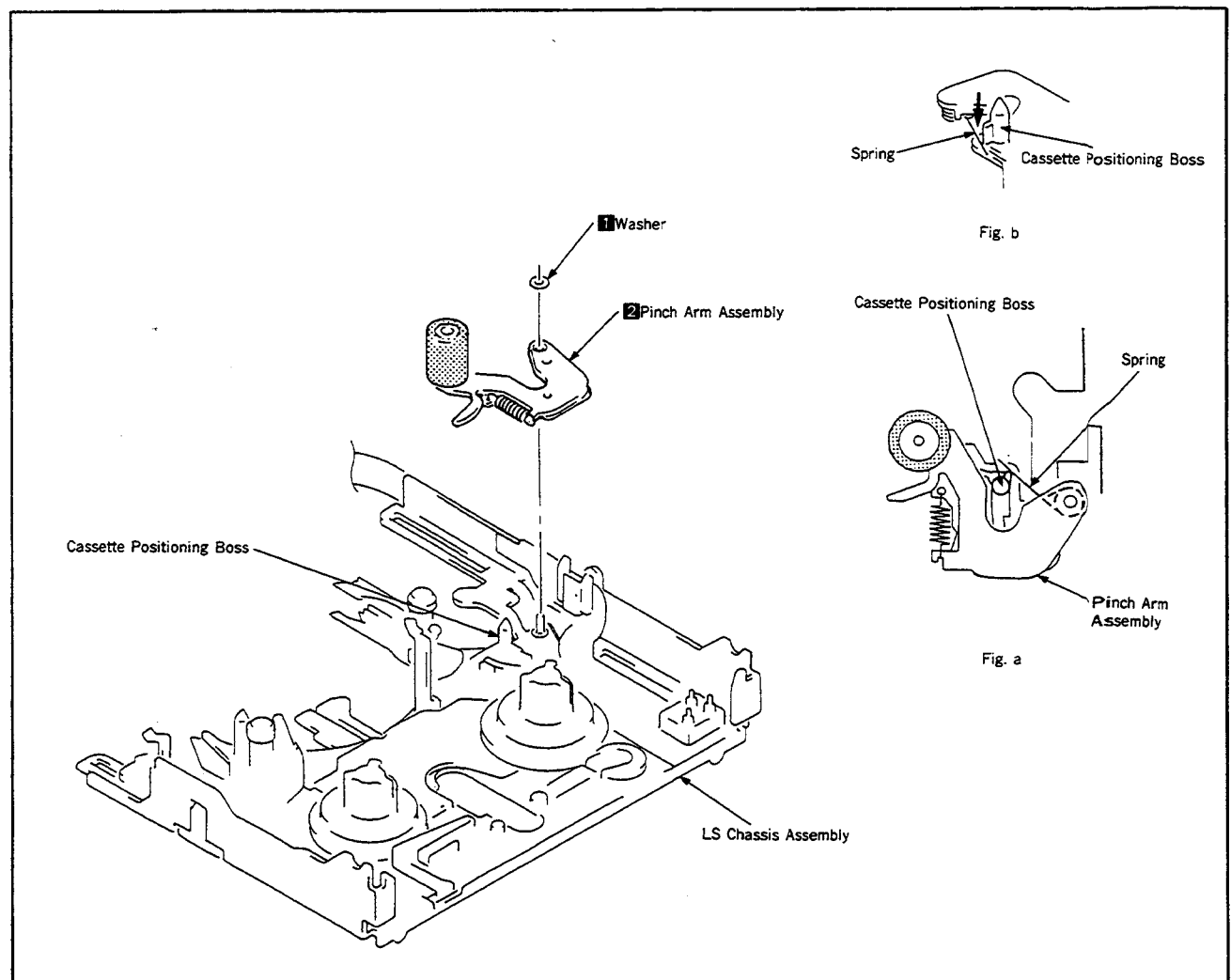


Fig. 13

LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Remove a screw **1**, TG-5 base holder **2**, and LS flexible board **3**.
- 5) Remove a lock washer **4**, then the gooseneck assembly **5**.
- 6) Remove four screws **6**, then the LS chassis assembly **7**.

2. Mounting

- 1) Select the **USE** mode.
- 2) Confirm that the T hard claw and the outsert on the back of LS chassis are positioned as shown in Fig. a. (The T hard claw must be higher than corner **a** of chassis hole.) If not high, turn the outsert in the arrow direction while pushing the T hard claw from LS chassis to the chassis.
- 3) Sliding the GL slider, align the top edge of long hole **b** in GL slider with the edge face **c** of LS chassis hole as shown in Fig. b.
- 4) Mount the LS chassis assembly **7** on the chassis.

Note : At this time, align a dowel **d** on LS chassis with a long hole **e** of No.7 guide on chassis, a long hole of GL slider with a GL arm pin, a groove of LS cam plate with an LS arm pin respectively as shown in Fig. c and d.

- 5) Tighten four screws **6**.
- 6) Mount the LS flexible board **3** and TG-5 base holder **2**, then tighten the screw **1**.
- 7) Mount the Gooseneck assembly **5** and fix it with a washer **4**.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

- 8) Referring to 3-2, mount the protector base assembly.
- 9) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 10) Referring to 1-1, mount the cassette compartment assembly.

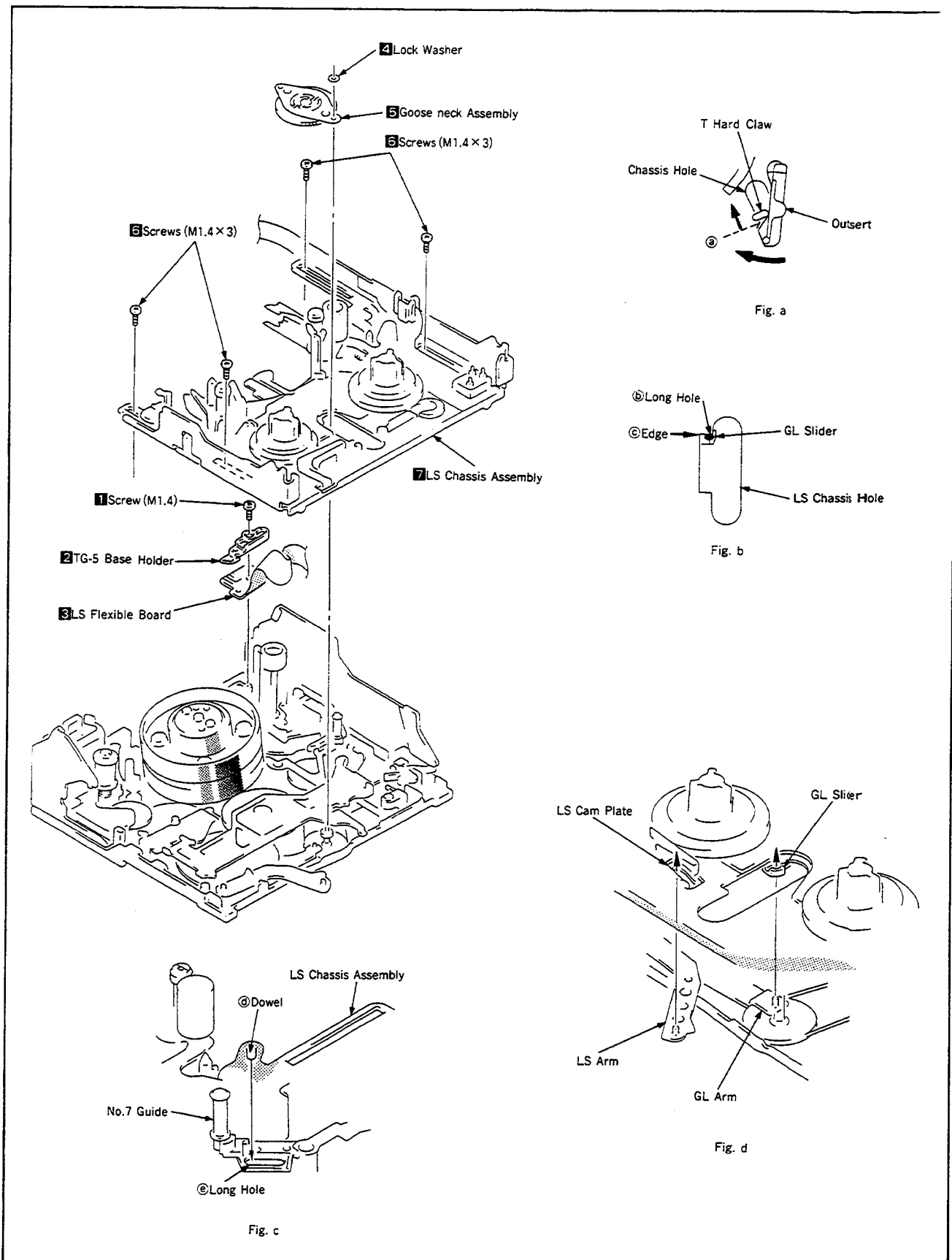


Fig. 14

3- GUIDE BASE T ASSEMBLY AND GUIDE BASE S ASSEMBLY (Fig. 15, 16)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Push in the GL slider **1** toward the arrow **A**, and remove the guide base T assembly **2** and guide base S assembly **3** from the guide rail respectively as shown in Fig. 15.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

- 6) Turning the guide base T assembly **2** and guide base S assembly **3** respectively, align the shaft to hole to remove as shown in Fig. a.

2. Mounting

- 1) Turning the guide base T assembly **2** and guide base S assembly **3** respectively, align the shaft with a hole to mount as shown in Fig. a (Fig. 15).
- 2) On the back side of chassis, insert the guide arm T assembly **4**, guide arm S assembly **5** and GL slider **1** from position shown in Fig.b to position shown in Fig. c. Also, aligning the guide base T assembly **2** and guide base S assembly **3** with the respective guide rails, push in the GL slider **1** toward the arrow **B** as shown in Fig. 16.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

- 3) Referring to 3-7, mount the LS chassis assembly.
- 4) Referring to 3-2, mount the protector base assembly.
- 5) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm.

- 6) Referring to 1-1, mount the cassette compartment assembly.

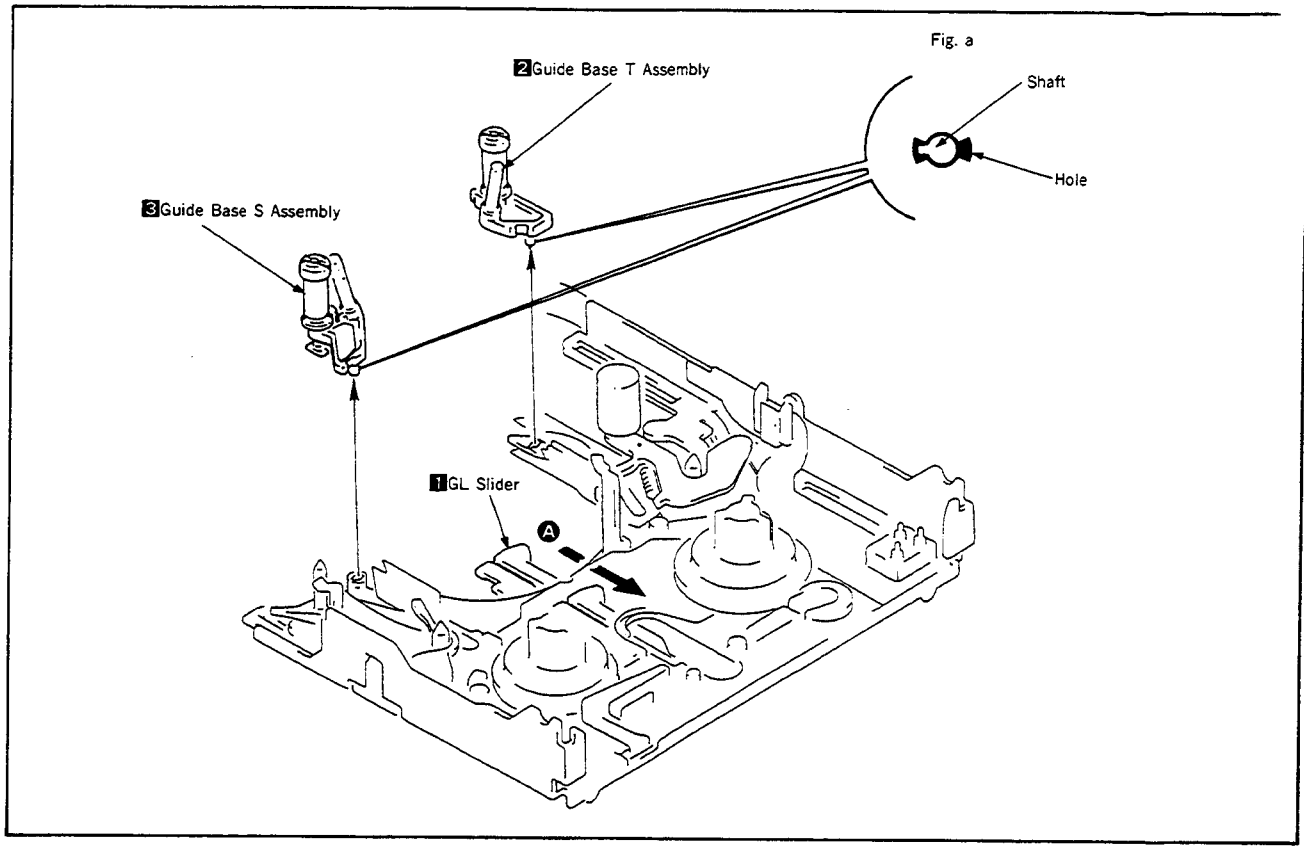


Fig. 15

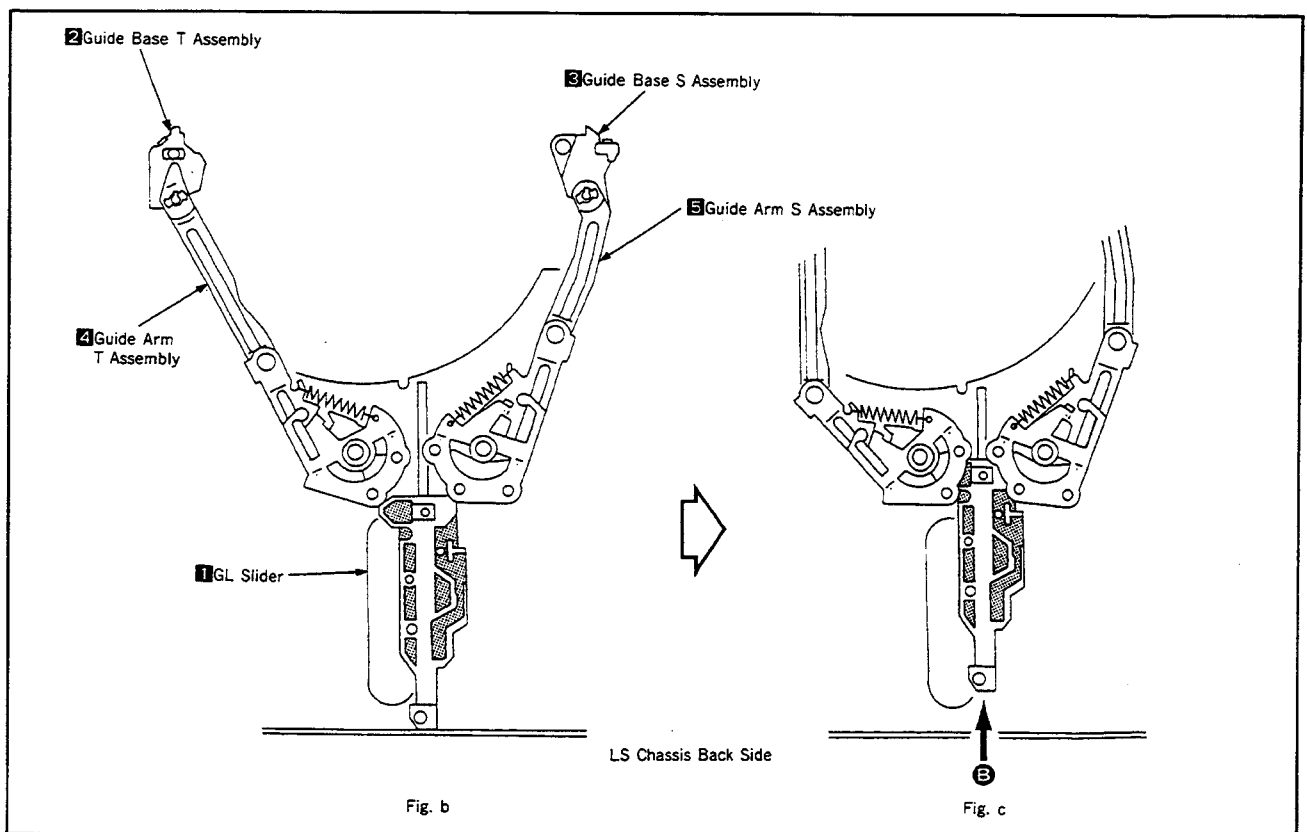


Fig. 16

5 GUIDE ARM T ASSEMBLY AND GUIDE ARM S ASSEMBLY (Fig. 17)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Referring to 3-8, remove the guide base T assembly and guide base S assembly.
- 6) Remove lock washers **1**, then the guide arm T assembly **2** and guide arm S assembly **3** respectively from the back side of chassis.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assmby, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

2. Mounting

- 1) Mount the guide arm T assembly **2** and guide arm S assembly **3**, then fix them with a lock washer **1** respectively.

Note : Do not invert the LS chassis up side down, otherwise the T reel table assembly, T soft arm and T soft assembly will drop. Also, take care not to allow the S reel table to float up, or the tension regulator string bends. (Refer to 3-5 T Reel Table Assembly and T Soft Assembly, and 3-10 S Reel Table Assembly and TG-1 Arm Assembly.)

- 2) Referring to 3-8, mount the guide base T assembly, guide-base S assembly and GL slider.
- 3) Referring to 3-7, mount the LS chassis assembly.
- 4) Referring to 3-2, mount the protector base assembly.
- 5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 6) Referring to 1-1, mount the cassette compartment assembly.

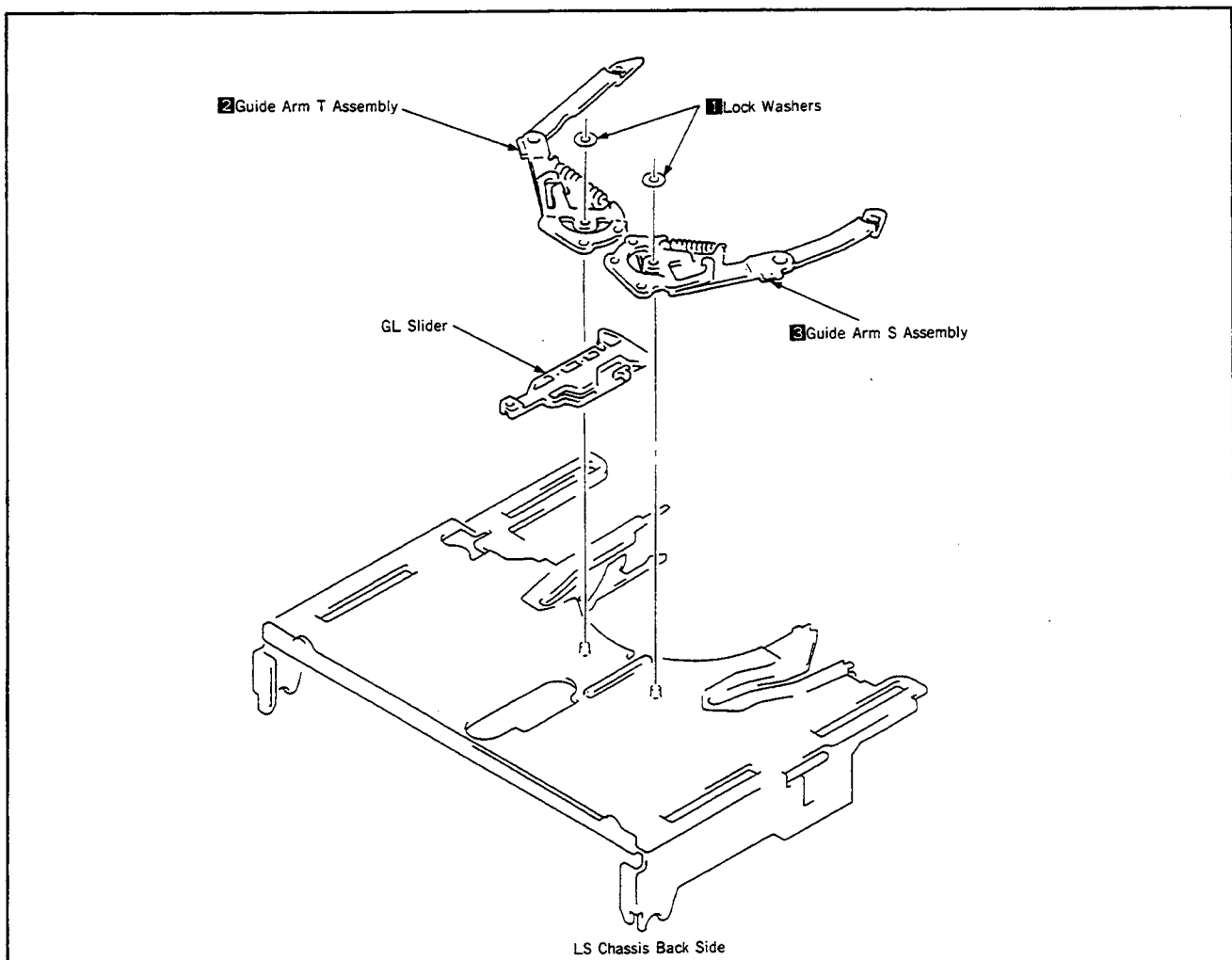


Fig. 17

3-10. SUPPLY REEL TABLE ASSEMBLY AND TG-1 ARM ASSEMBLY (Fig. 18)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Referring to 3-8, remove the guide base S assembly.
- 6) Remove a screw **1**, then the string **2** from the supply reel table assembly **3**. For easy removal of string block **4**, insert a flat-blade screwdriver into a groove **a** and push it up (Fig. a).
- 7) Remove the supply reel table assembly **3**.
- 8) Remove a tension coil spring **5**.
- 9) Turn the TG-1 arm assembly **6** up to a portion **c** of LS chassis hole in the arrow **A** direction so that its tab **b** can be disengaged (Fig. b).

2. Mounting

- 1) Pushing the S soft brake **7** toward the arrow **B**, mount the supply reel table assembly **3**.
- 2) Route the string **2** under the TG-1 arm assembly **6**, and insert the tab **b** of TG-1 arm assembly into the LS chassis hole **c**, then turn the TG-1 arm assembly in the reverse direction of arrow **A** (Fig. b).

- 3) Wind the string **2** along the groove of supply reel table assembly **3** (Fig. a).

Note : Do not curl the string extremely. Also, avoid adhesion : oil, otherwise the image will be distorted.

- 4) Using the FWD B.T. adjusting driver (Ref. No. J-15), shift the string block **4** toward the arrow **c** and tighten the screw **1** (Fig. a).
- 5) Engage the tension coil spring **5** to the chassis hook.

Note : Confirm that the string **2** is surely wound around the groove of supply reel table assembly **3** (Fig. a).

- 6) Referring to 3-8, mount the guide base S assembly.
- 7) Referring to 3-7, mount the LS chassis assembly.
- 8) Referring to 3-2, mount the protector base assembly.
- 9) Referring to 3-1, mount the Retainer, Gooseneck assembly.

Note : At this time, confirm that the T soft assembly is surely engaged with the T soft arm. (Refer to 3-5 Take-up Reel Table Assembly and Take-up Soft Assembly.)

- 10) Referring to 1-1, mount the cassette compartment assembly.

Note : Referring to 3-22, adjust the tension regulator position.

Note : Referring to 3-23, adjust the forward back tension.

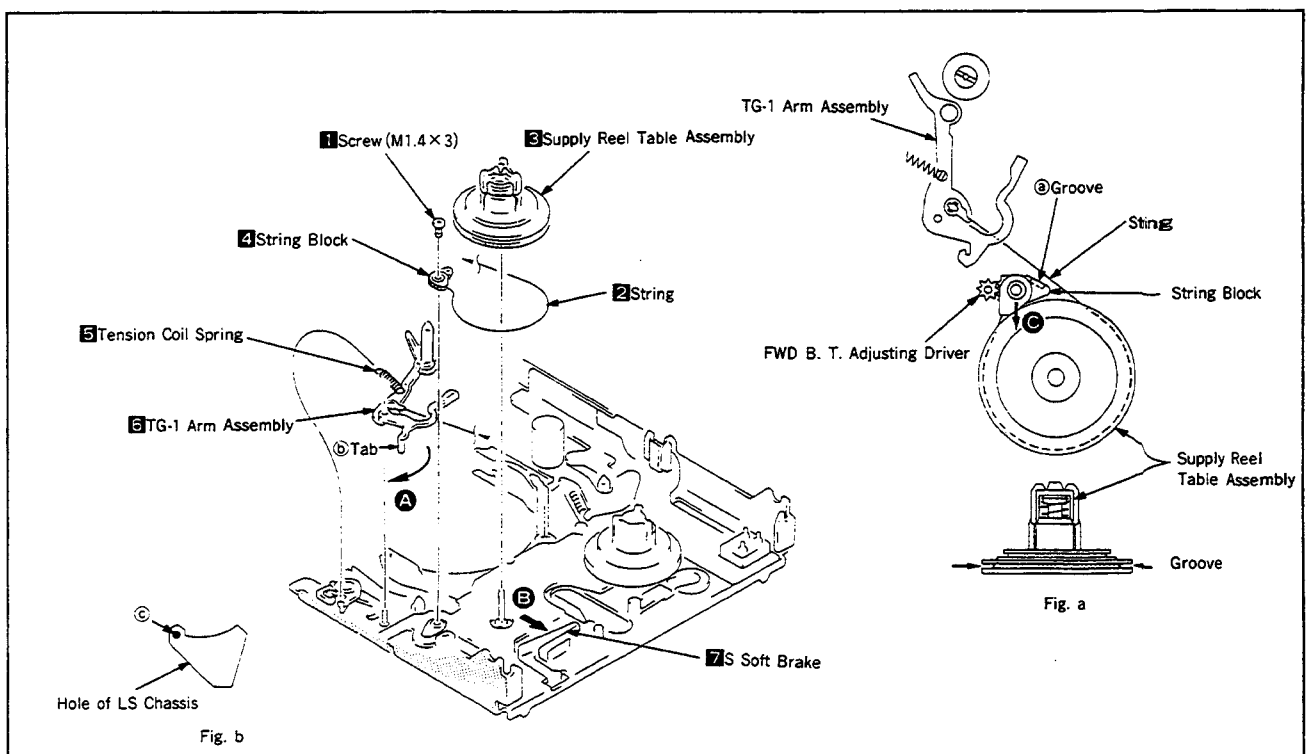


Fig. 18

3. TG-2 ROLLER ASSEMBLY (Fig. 19)

1. Removal

- 1) Remove the TG-2 roller assembly **1**.
- 2) Remove a compression coil spring **2**.

2. Mounting

- 1) Insert a compression coil spring **2** into the boss on chassis.
- 2) Rotate gently the TG-2 roller assembly **1** until the screw is engaged.

3. Presetting of TG-2 Roller Height (Fig. a)

- 1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to $3.3 \pm 0.05\text{mm}$.

Note : After adjustment, perform 4. TAPE PATH ADJUSTMENT.

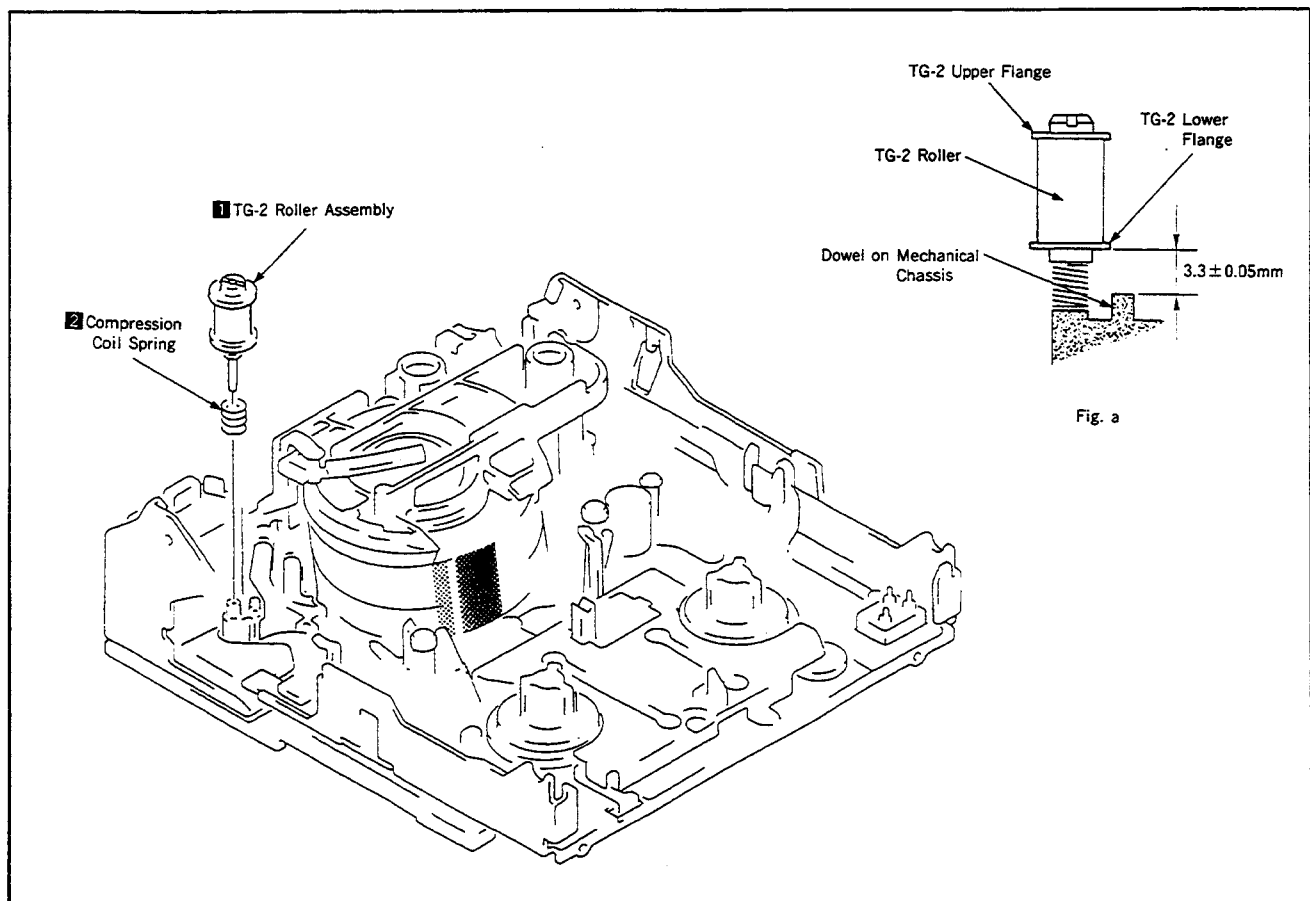


Fig. 19

3-12. TG-7 ARM ASSEMBLY (Fig. 20)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Raise a portion ③ of TG-7 arm Leaf spring **1** in arrow direction with a flat-blade screwdriver or tweezers to disengage the tab from the chassis, then remove the TG-7 arm Leaf spring as shown in Fig. a.
- 6) Remove the TG-7 assembly **2** from the shaft of mechanical chassis.

2. Mounting

- 1) Mount the TG-7 arm assembly **2** to the shaft of mechanical chassis.
- 2) Mount the TG-7 arm Leaf spring **1** to the mechanical chassis.
* Push in the tab of Leaf spring until it clicks into a detent of chassis (Fig. a).
- 3) Referring to 3-7, mount the LS chassis assembly.
- 4) Referring to 3-2, mount the protector base assembly.
- 5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 6) Referring to 1-1, mount the cassette compartment assembly.

Note : After mounting, perform 4. TAPE PATH ADJUSTMENT.

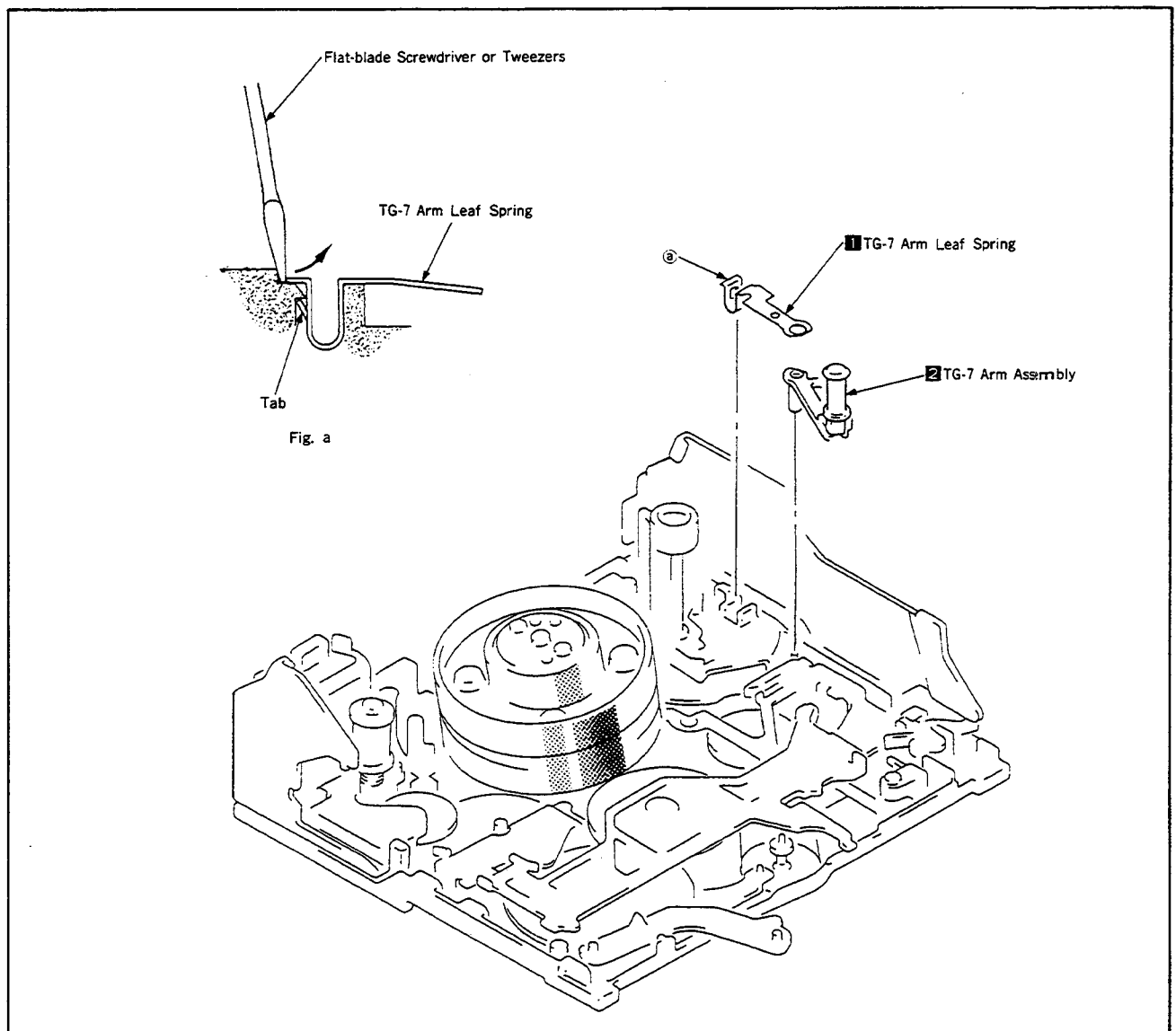


Fig. 20

3. LM MOTOR ASSEMBLY (Fig. 21)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Select the **LOAD** mode (at the position where the FF arm assembly is not above the screw **1**).
- 6) Remove two screws **1**, then the LM motor assembly **2**.

2. Mounting

- 1) Aligning the dowel **a** of LM motor assembly **2** with the hole **b** of mechanical chassis, mount the LM motor assembly with its hole **c** inserted into the mechanical chassis shaft **d**.
- 2) Tighten two screws **1**.
- 3) Referring to 3-7, mount the LS chassis assembly.
- 4) Referring to 3-2, mount the protector base assembly.
- 5) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 6) Referring to 1-1, mount the cassette compartment assembly.

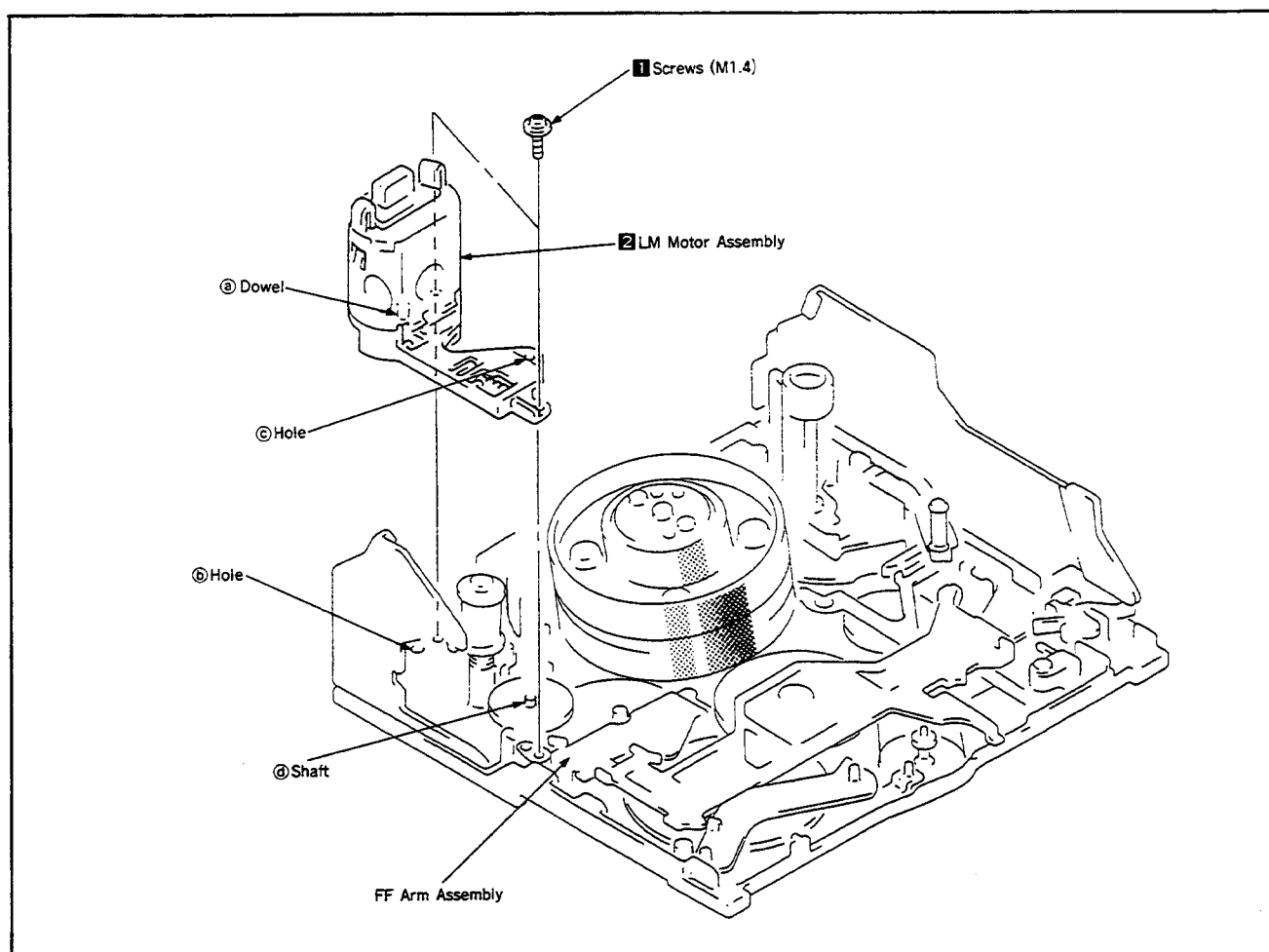


Fig. 21

3-14. LS ARM (Fig. 22)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Remove the LS arm **1** from the shaft of mechanical chassis.

Note : Take care not to drop the LS roller **2**.

2. Mounting

- 1) Mount the LS arm **1** meeting with mechanical chassis sh. and cam groove.

Note : Move the LS arm **1** in arrow direction to confirm that the LS roller **2** is surely inserted.

- 2) Referring to 3-7, mount the LS chassis assembly.
- 3) Referring to 3-2, mount the protector base assembly.
- 4) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 5) Referring to 1-1, mount the cassette compartment assembly.

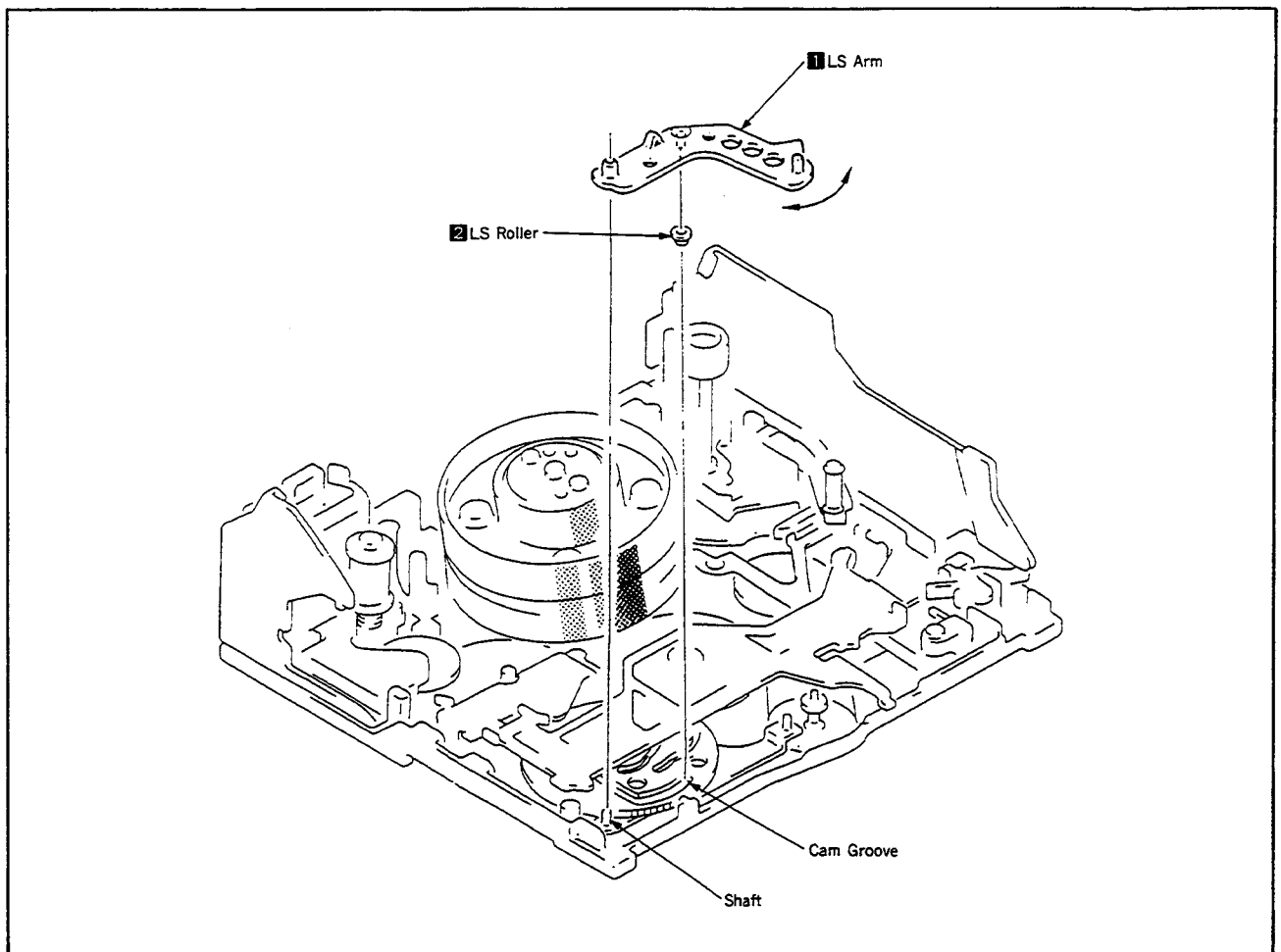


Fig. 22

M SLIDER ASSEMBLY (Fig. 23)

Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Remove two screws **1**, then the gear holder **2**.
- 6) Remove two lock washers **3**, then the M slider assembly **4**.

Mounting

- 1) Mount the M slider assembly **4**, aligning long holes **a** and **b** of M slider assembly with shafts **c** and **d** of mechanical chassis, and a long hole **e** with shaft **f** of press arm assembly, and also shaft **g** with outer groove **h** of cam respectively.
- 2) Mount two lock washers **3**.
- 3) Mount the gear holder **2** with its outserts **i** and **j** inserted into holes in the mechanical chassis.
- 4) Tighten two screws **1**.
- 5) Referring to 3-7, mount the LS chassis assembly.
- 6) Referring to 3-2, mount the protector base assembly.
- 7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 8) Referring to 1-1, mount the cassette compartment assembly.

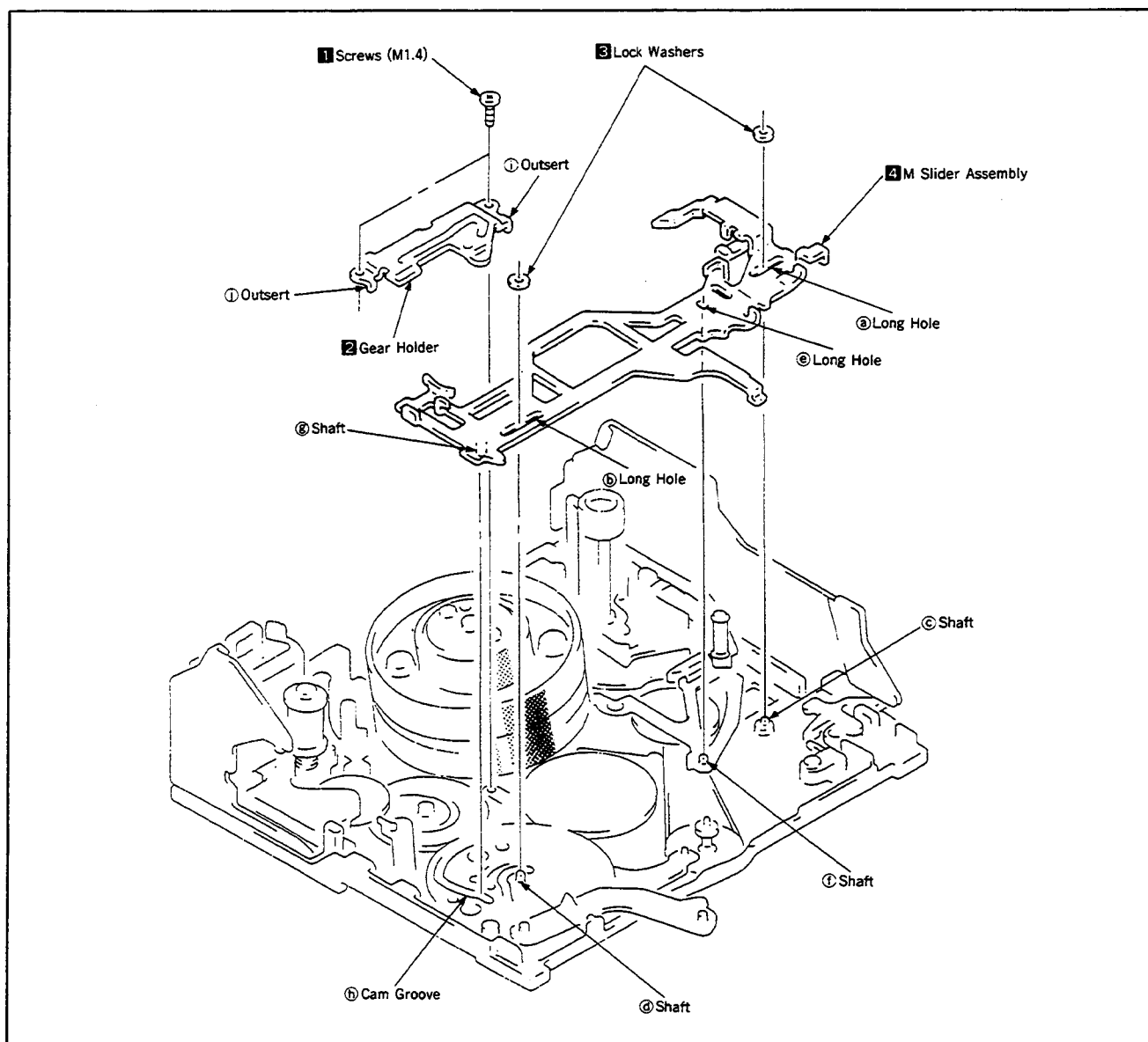


Fig. 23

3-16. PINCH PRESS ARM ASSEMBLY (Fig. 24)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-3, remove the drum assembly.
- 5) Referring to 3-7, remove the LS chassis assembly.
- 6) Referring to 3-15, remove the M slider assembly.
- 7) Remove a lock washer **1**, then pinch press arm assembly **2**.

2. Mounting

- 1) Mount the pinch press arm assembly **2**, inserting its shaft **4** into the cam groove **5** of HC drive arm, and hole **3** in the shaft **4** of mechanical chassis.
- 2) Mount the lock washer **1**.
- 3) After mounting, shift the pinch press arm assembly toward the arrow direction.
- 4) Referring to 3-15, mount the M slider assembly.
- 5) Referring to 3-7, mount the LS chassis assembly.
- 6) Referring to 3-3, mount the drum assembly.
- 7) Referring to 3-2, mount the protector base assembly.
- 8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 9) Referring to 1-1, mount the cassette compartment assembly.

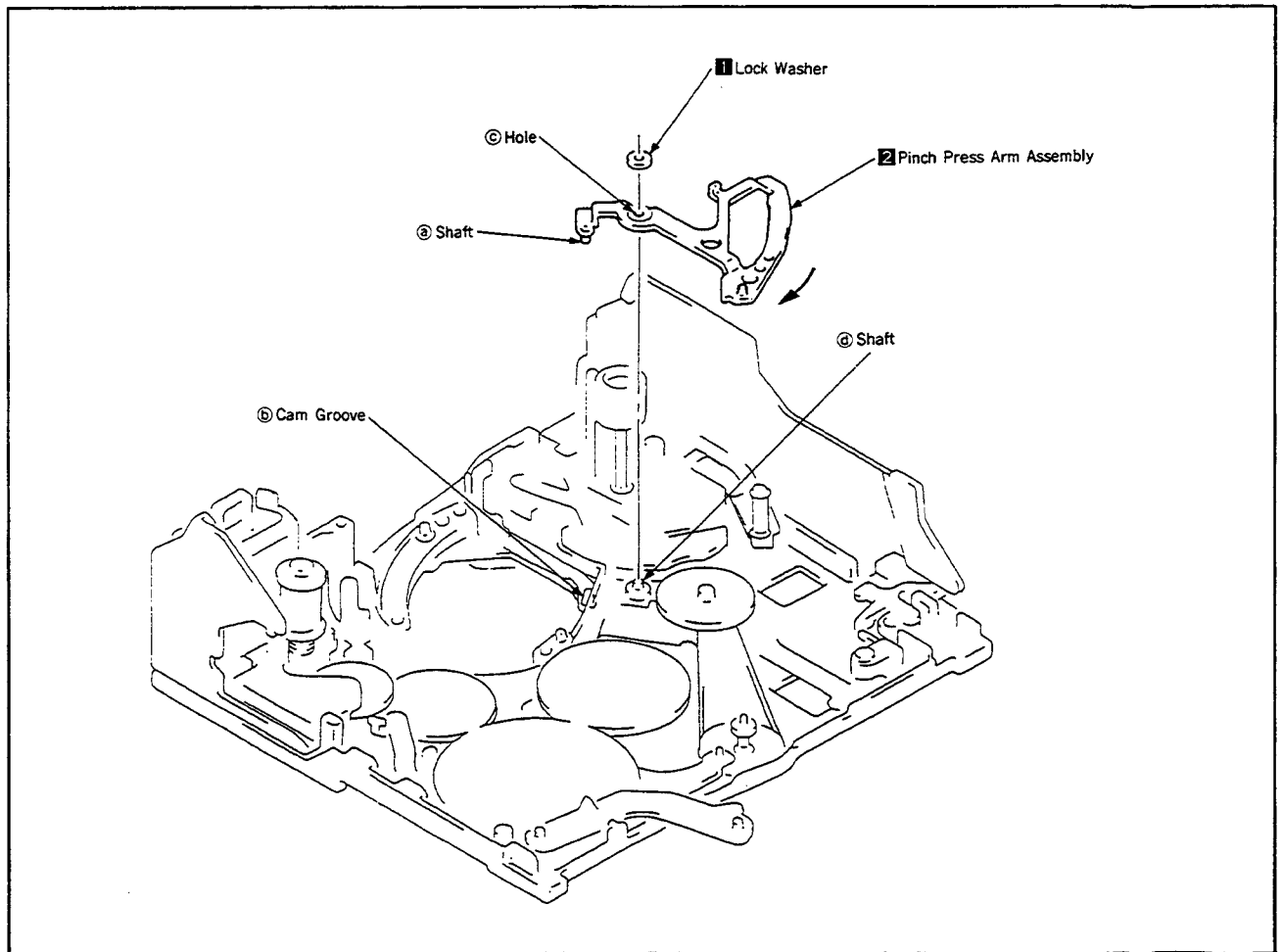


Fig. 24

7. CAM (Fig. 25)

Removal

- Referring to 1-1, remove the cassette compartment assembly.
- Referring to 3-1, remove the Retainer, Gooseneck assembly.
- Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Referring to 3-14, remove the LS arm assembly.
- 6) Referring to 3-15, remove the M slider assembly.
- 7) Remove the cam **1**.

2. Mounting

- 1) Referring to 3-13, remove the LM motor assembly.

Note : Take care not to allow grease of LM motor assembly to stick to the TG-2 roller assembly.

- 2) Mount the cam **1**, aligning its center hole with shaft of mechanical chassis, and the cam groove with the shaft of GL arm assembly. At this time, make sure that the ▲ mark on L gear B is aligned with that on the cam and also a recess is aligned with the phase aligning hole respectively as shown in Fig. a.

Note : Apply grease to the cam groove if it scarcely remains.

- 3) Mount the LM motor assembly.
- 4) Referring to 3-15, mount the M slider assembly.
- 5) Referring to 3-14, mount the LS arm assembly.
- 6) Referring to 3-7, mount the LS chassis assembly.
- 7) Referring to 3-2, mount the protector base assembly.
- 8) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 9) Referring to 1-1, mount the cassette compartment assembly.

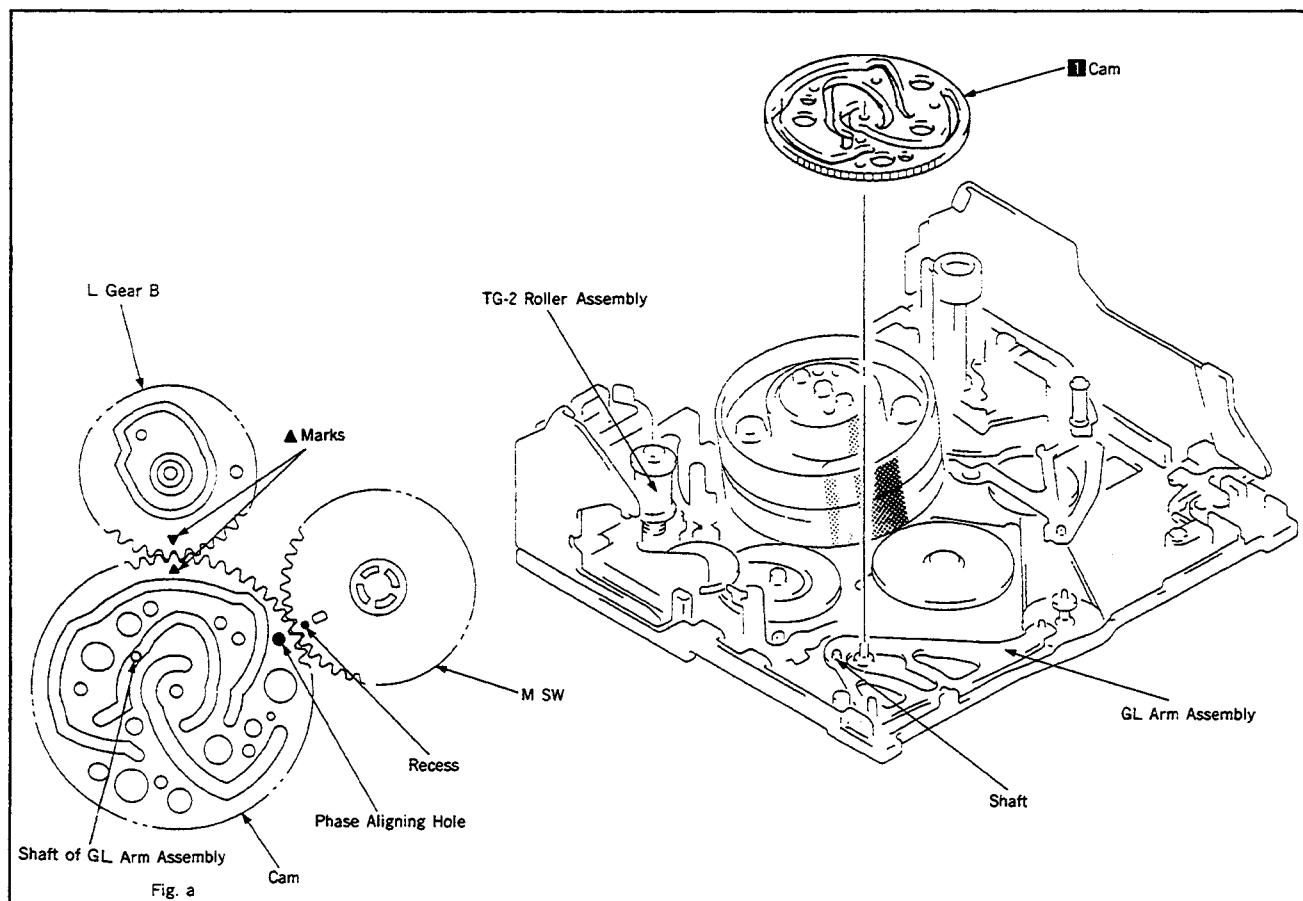


Fig. 25

3-18. GL ARM ASSEMBLY (Fig. 26)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Referring to 3-14, remove the LS arm assembly.
- 6) Referring to 3-15, remove the M slider assembly.
- 7) Referring to 3-17, remove the cam.
- 8) Remove the GL arm assembly **1**.

2. Mounting

- 1) Mount the GL arm assembly **1** with its hole **@** inserted in the shaft **Ⓟ** of mechanical chassis.
- 2) Referring to 3-17, mount the cam.
- 3) Referring to 3-15, mount the M slider assembly.
- 4) Referring to 3-14, mount the LS arm assembly.
- 5) Referring to 3-7, mount the LS chassis assembly.
- 6) Referring to 3-2, mount the protector base assembly.
- 7) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 8) Referring to 1-1, mount the cassette compartment assembly.

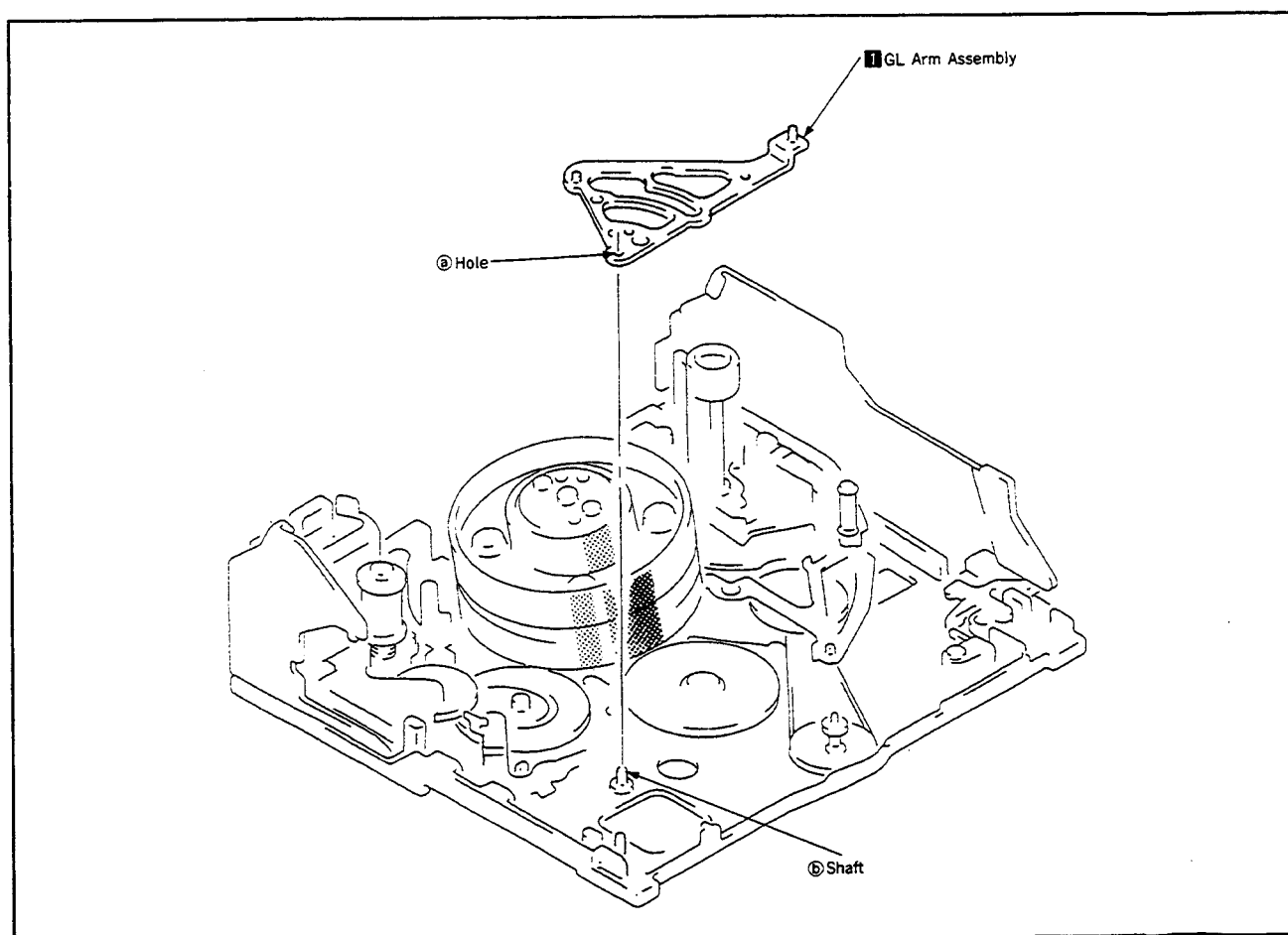


Fig. 26

9. L GEAR A AND L GEAR B (Fig. 27)

Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-7, remove the LS chassis assembly.
- 5) Referring to 3-14, remove the LS arm assembly.
- 6) Referring to 3-15, remove the M slider assembly.
- 7) Referring to 3-17, remove the cam.
- 8) Referring to 3-13, remove the LM motor assembly.
- 9) Remove the FF arm assembly **1**.
- 10) Remove the L gear A **2**.
- 11) Remove the L gear B **3**.

2. Mounting

- 1) Insert the L gear B **3** into the shaft of mechanical chassis. (At this time, the phase aligning mark ▲ should be faced toward the cam mounting shaft @.)
- 2) Insert the L gear A **2** into the shaft of mechanical chassis.
- 3) Mount the FF arm assembly **1** with its two shafts inserted into the cam groove of L gear B **3** and the hole of mechanical chassis.
- 4) Referring to 3-17, mount the cam.
- 5) Referring to 3-13, mount the LM motor assembly.
- 6) Referring to 3-15, mount the M slider assembly.
- 7) Referring to 3-14, mount the LS arm assembly.
- 8) Referring to 3-7, mount the LS chassis assembly.
- 9) Referring to 3-2, mount the protector base assembly.
- 10) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 11) Referring to 1-1, mount the cassette compartment assembly.

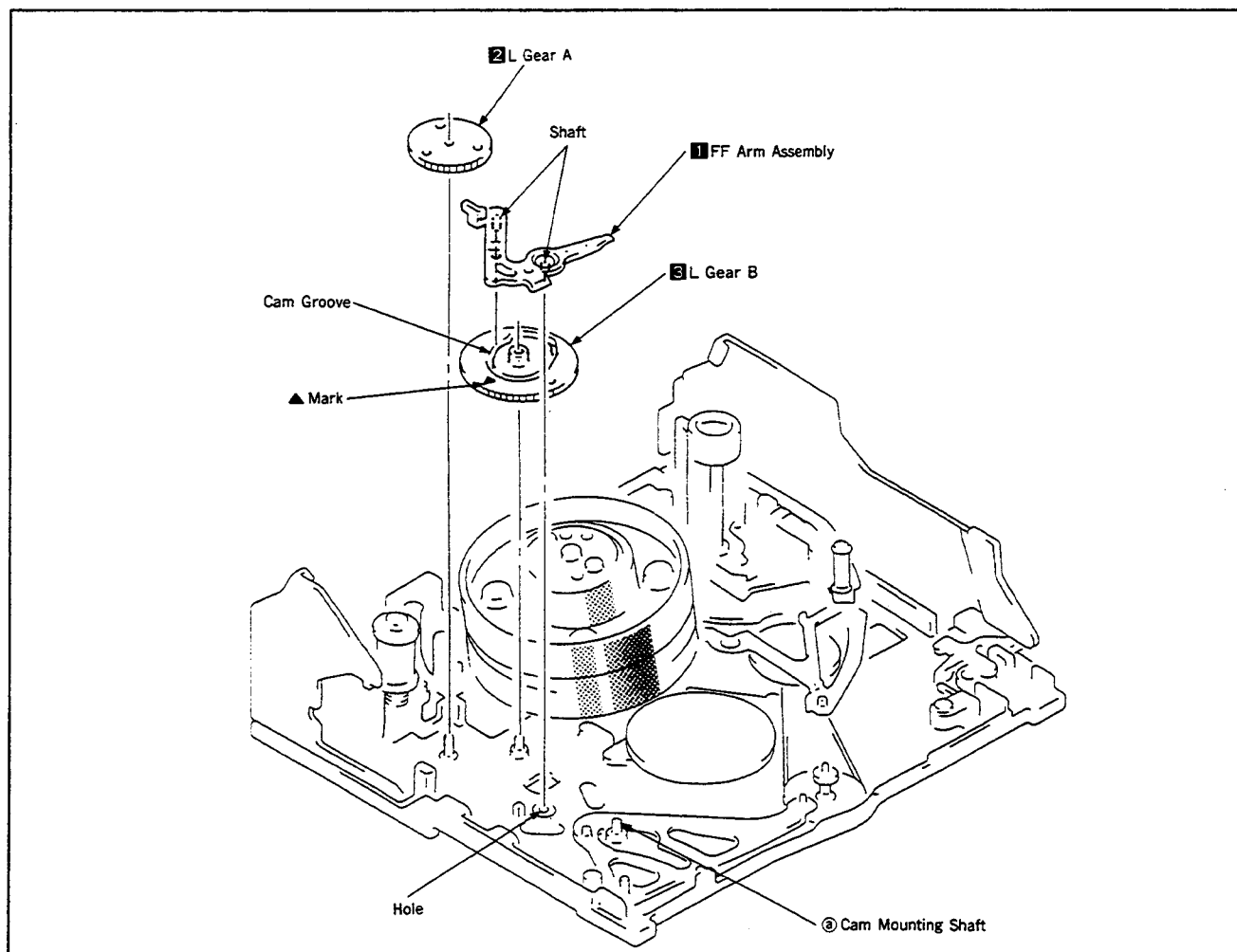


Fig. 27

3-20. RELAY PULLEY AND CHANGE GEAR ASSEMBLY (Fig. 28)

1. Removal

- 1) Referring to 1-1, remove the cassette compartment assembly.
- 2) Referring to 3-1, remove the Retainer, Gooseneck assembly.
- 3) Referring to 3-2, remove the protector base assembly.
- 4) Referring to 3-3, remove the drum assembly.
- 5) Referring to 3-7, remove the LS chassis assembly.
- 6) Referring to 3-14, remove the LS arm assembly.
- 7) Referring to 3-15, remove the M slider assembly.
- 8) Referring to 3-17, remove the cam.
- 9) Referring to 3-18, remove the GL arm assembly.
- 10) Referring to 3-16, remove the pinch press arm assembly.
- 11) Remove a lock washer **1**, then remove together the Change gear assembly **2**, relay belt **3** and relay pulley **4**.

2. Mounting

*Give one or two drips of oil to the conversion gear shaft and relay pulley shaft respectively. (Oiling range is under the neck as shown in Fig. a.)

- 1) Hooking the relay belt **3** to the relay pulley **4** and Change gear assembly **2**, mount respective parts.

*At first, insert the relay pulley into the mechanical chassis-shaft, then the change gear assembly by engaging with the capstan motor gear.

Note : Take care not to damage the Change gear by the capstan motor gear.

- 2) Mount a lock washer **1**.
- 3) Referring to 3-16, mount the pinch press arm assembly.
- 4) Referring to 3-18, mount the GL arm assembly.
- 5) Referring to 3-17, mount the cam.
- 6) Referring to 3-15, mount the M slider assembly.
- 7) Referring to 3-14, mount the LS arm assembly.
- 8) Referring to 3-7, mount the LS chassis assembly.
- 9) Referring to 3-3, mount the drum assembly.
- 10) Referring to 3-2, mount the protector base assembly.
- 11) Referring to 3-1, mount the Retainer, Gooseneck assembly.
- 12) Referring to 1-1, mount the cassette compartment assembly.

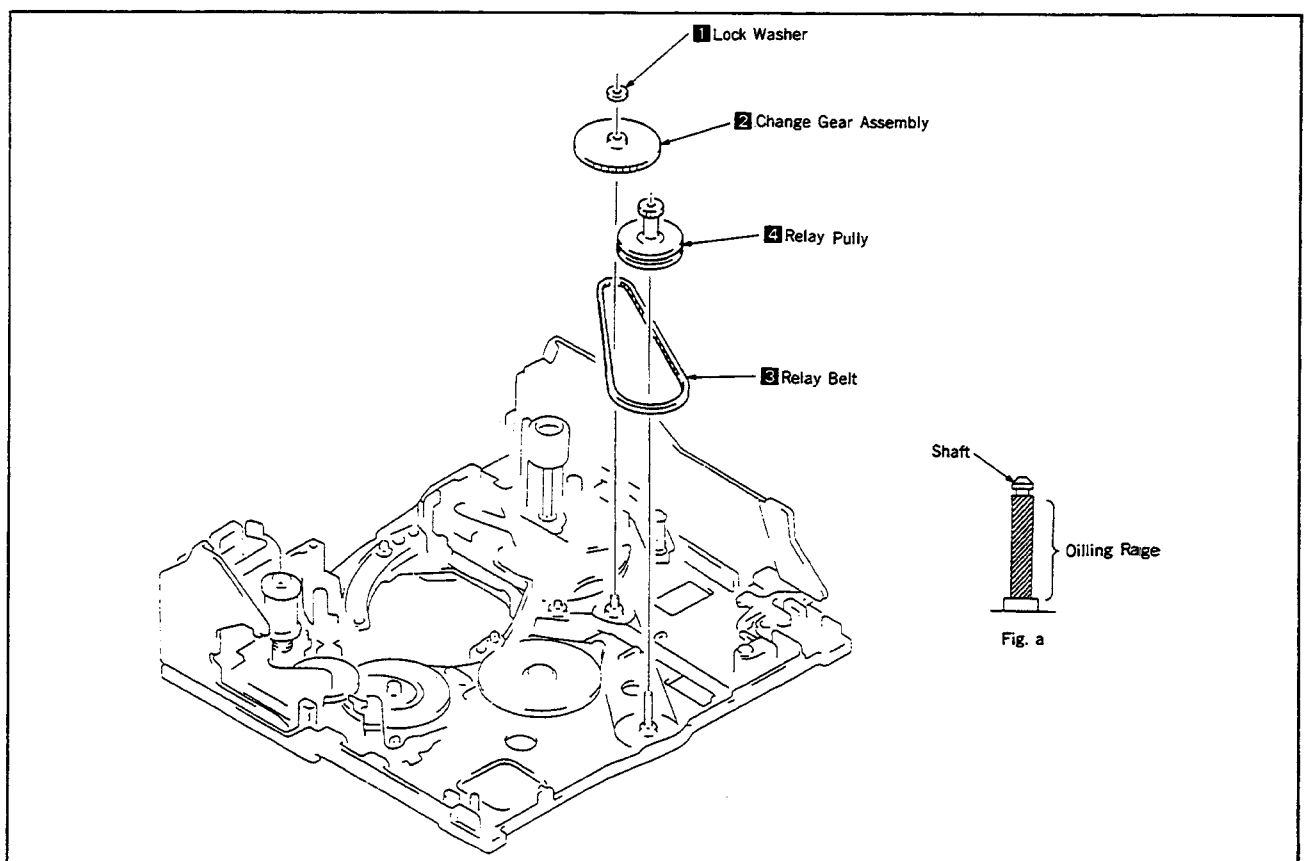


Fig. 28

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removal

· If possible, make a recording before removal.

- 1) Remove the two screws **1** (Fig. 29).
- 2) Mount the jig **2** (Ref. No. J-10) with the two supplied screws **3**, then screw the attached hexagon socket screws **4** to the jig **2**. The rotary upper drum **5** will move upward and come off (Fig. 30).

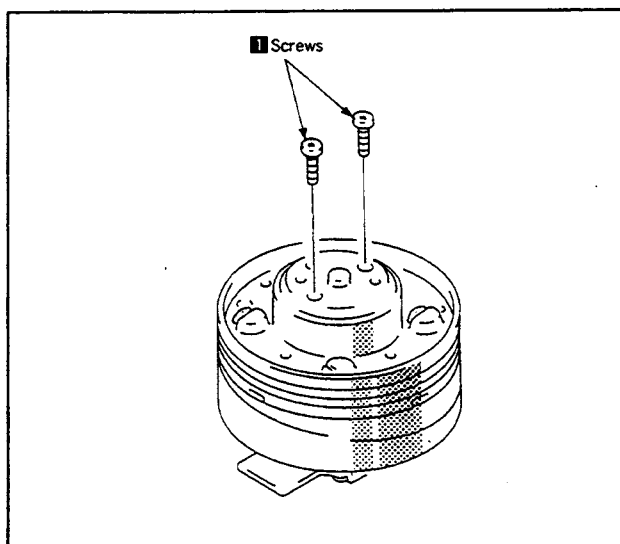


Fig. 29

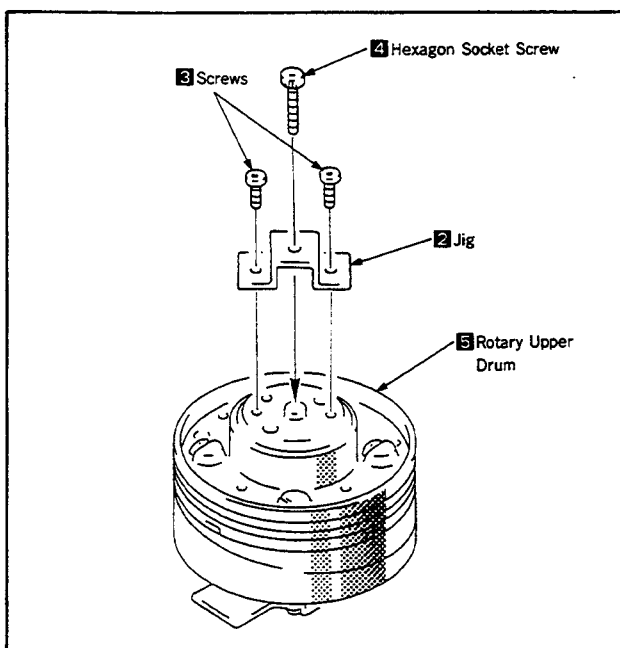


Fig. 30

2. Installation

- 1) Wipe clean the flange surface and the rotary upper drum **5** surface that makes contact with it, and confirm that they are free from dirt and scratches.
- 2) Insert the jig **6** (Ref. No. J-10) into the drum positioning hole, then set the rotary upper drum **5** by passing the jig through its positioning hole **7**. (Fig.31)
- 3) Remove the jig **6** and push down the rotary upper drum **5** gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws **1** alternately (Fig.29).
- 4) Insert the jig **6** into the positioning hole **7** again and confirm that it goes in smoothly. If it does not, loosen the two screws **1**, repeat step 2) of the Removal paragraph and restart the setting procedure.
- 5) Tighten the screws **1**.

Note : After installing, be sure to perform tape path adjustment as described in section 4.

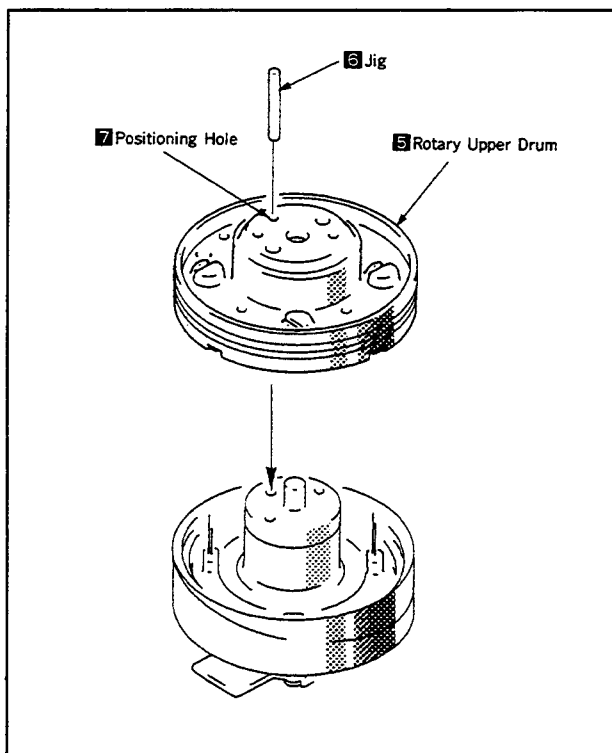


Fig. 31

3-22. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 32)

1. Adjustment

- 1) Set a cassette tape and run the tape in the PB mode.
- 2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 4.2 mm.
- 3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
- 4) Loosen the screw **I**.
- 5) If No.1 guide is located inside the specified position, shift the string block toward the arrow **A** using the FWD B.T. adjusting driver (Ref No. J-15). Or, if it is located outside, shift toward the arrow **B**.
- 6) Tighten the screw **I**.

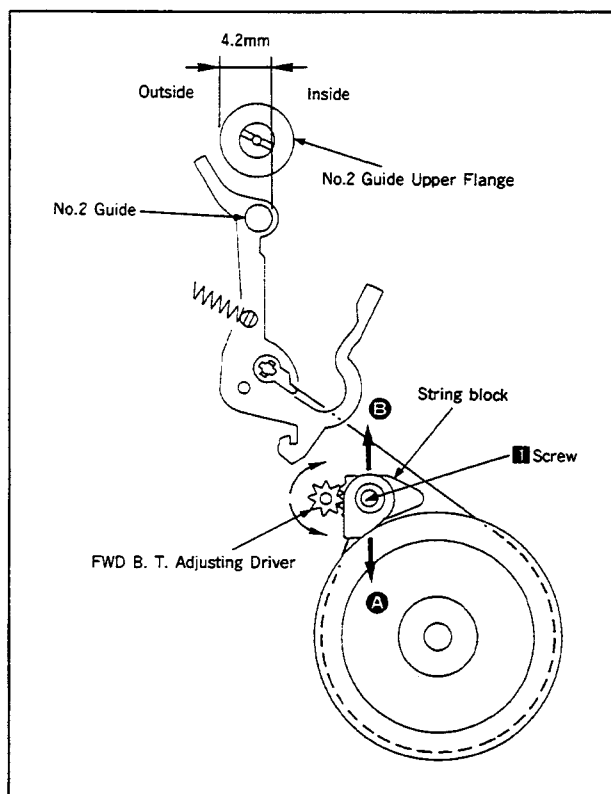


Fig. 32

3-23. FWD BACK TENSION ADJUSTMENT (Fig.33)

- 1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-17).
- 2) Set the torque cassette (Ref No. J-10).
- 3) Select the FWD mode, and check that the torque of S reel table is 8.5 ~ 11.5 g · cm.
If it is out of standard, adjust the TG-1 spring hook position using the FWD B.T. adjusting driver (Ref No. J-15).

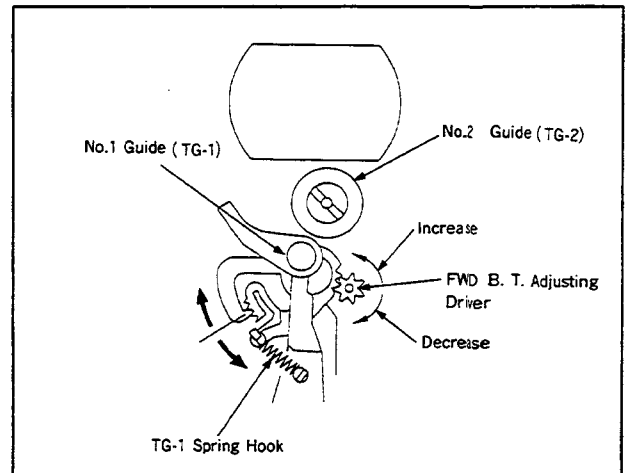


Fig. 33

3-24. REEL TORQUE CHECK

- 1) Set the torque cassette.
- 2) Select the FWD mode, and check that the torque fluctuation center of T reel table is 7 ~ 17 g · cm
- 3) Select the REV mode, and check that the torque fluctuation center of S reel table is 25 ~ 39 g · cm.
- 4) Select the REV mode, and check that the torque of T reel table is 7 ~ 17 g · cm.
- 5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.

This does away a tracking control knob and allows accurate track tracing.

On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.

Therefore, in the A mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No.J-16). So, fine tracking adjustment can be easily done. Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

Example) For CCD-FX410 series

Set the adjusting remote controller to the HOLD ON side.

- 1) Set PAGE : 1, ADDRESS : 00, DATA : 01 to cancel the PROTECT mode.
- 2) Set PAGE : D, ADDRESS : 01, DATA : 03 to select the PATH mode.

Note : Setting of PATH mode = TRACK SHIFT mode

If the adjusting remote controller (Ref No.J-16) is set to HOLD OFF once, then set to HOLD ON again after mode setting, the display of ADDRESS and DATA changes.

- 3) After adjustment is over, set DATA : 00, and press the PAUSE button on the adjusting remote controller (Ref No. J-16).

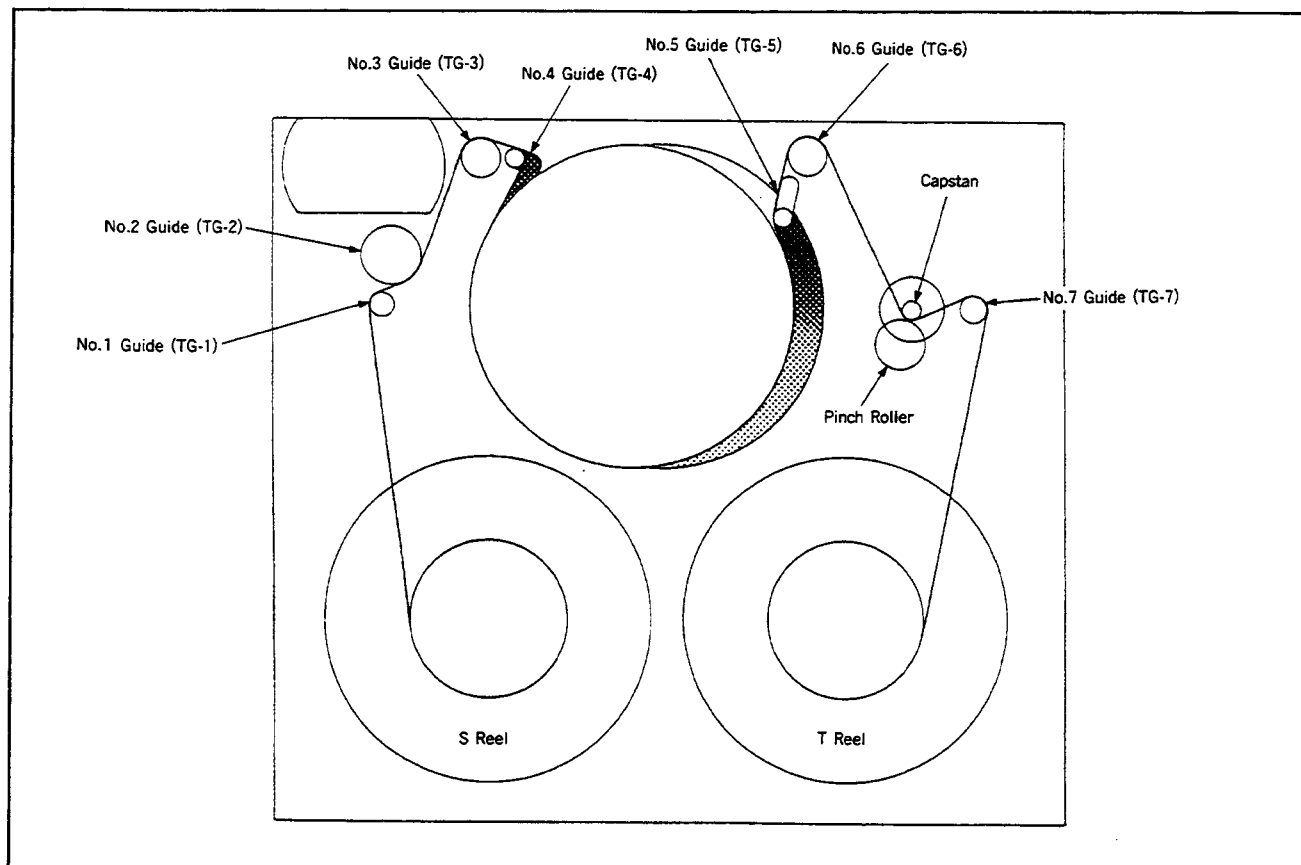


Fig. 34-A

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig.41).

Therefore, when performing section 4-4. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

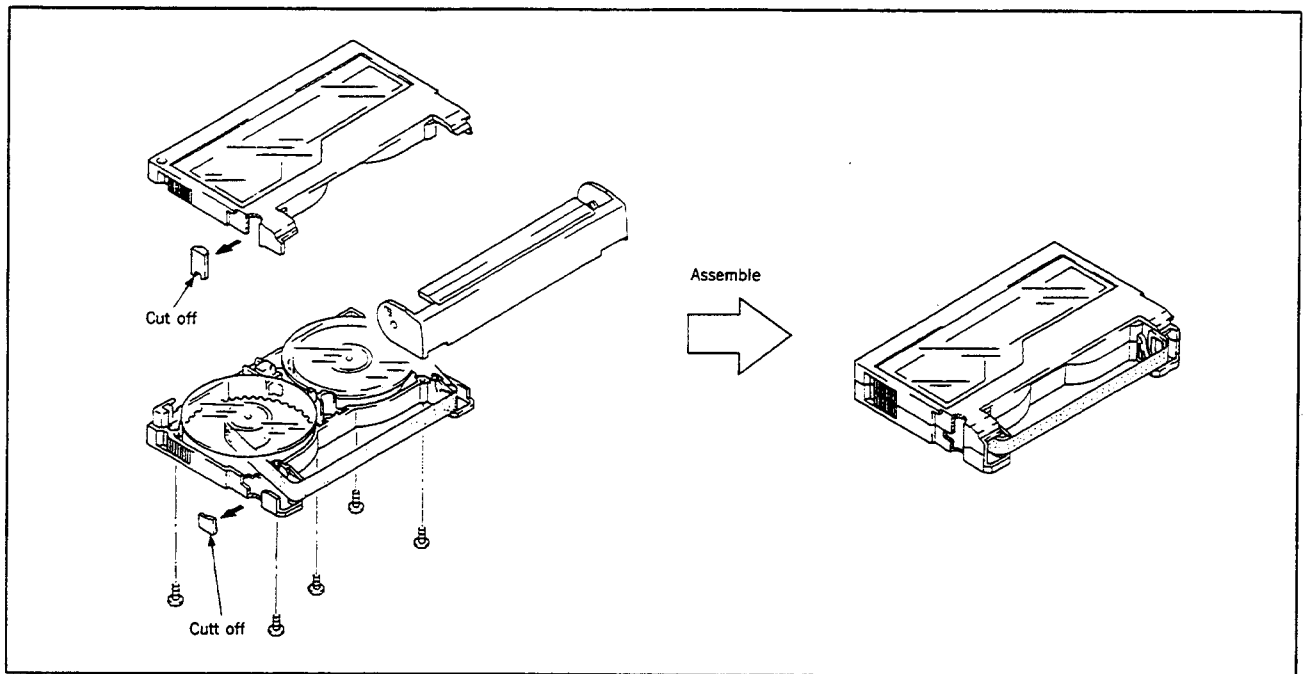


Fig. 34-B

4-1. PREPARATION FOR ADJUSTMENT

- 1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34-A).
- 2) Set the PATH mode using the adjusting remote controller.
- 3) connect an oscilloscope to the check pin connector of the set.

Example) For CCD-FX410 series

CH1 : CN001 pin ③ (PB RF OUT) on CS-31 board

CH2 : CN001 pin ④ (RF SWP) on CS-31 board

- 4) Play back a tracking alignment tape (NTSC : WR5-1N, or PAL : WR5-1C).

- 5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 35 ㉑).

If not flat, make adjustment with the procedures below.

When the RF waveform is not flat at the inlet/outlet ; See Fig. 35 ㉒ and ㉓.

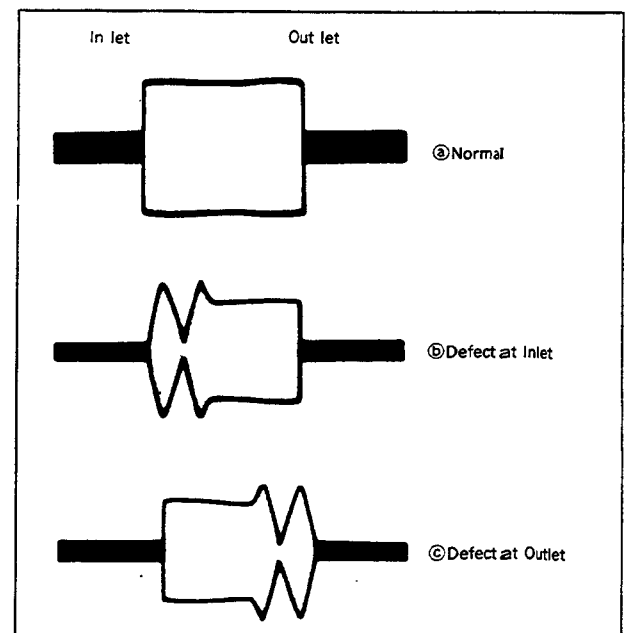


Fig. 35

4-2. TRACKING ADJUSTMENT (Fig. 36, 37)

- 1) Play back the tracking alignment tape.
- 2) Loosen the No.3 guide (TG-3) lock screw **1** and turn the No.3 guide to flatten the waveform at the inlet.
- 3) Tighten the No.3 guide (TG-3) lock screw **1** to lock the No.3 guide.
- 4) Loosen the No.6 guide (TG-6) lock screw **2** and turn the No.6 guide to flatten the waveform at the outlet.
- 5) Tighten the No.6 guide (TG-6) lock screw **2** to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.

: Take care not to allow interference between No.6 guide and drum when tightening the No.6 guide lock screw.

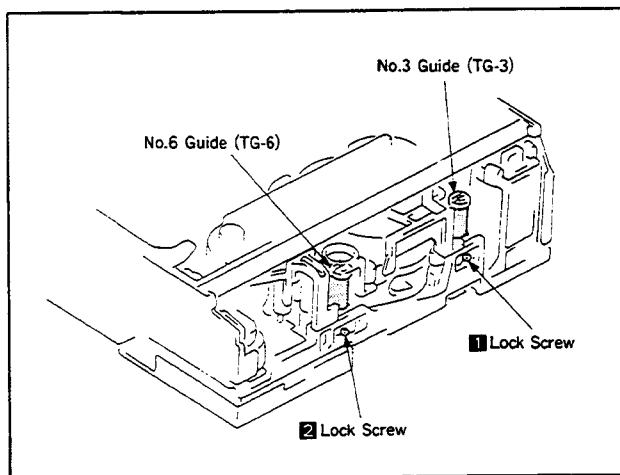


Fig. 36

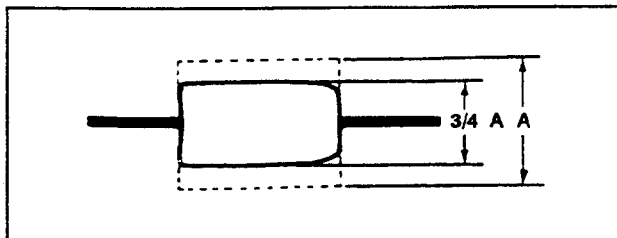


Fig. 37

4-3. No.2 GUIDE (TG-2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

4-3-1. No. 2 GUIDE (TG-2) HEIGHT PRESETTING (Fig. 38)

- 1) Rotating the TG-2 upper flange, adjust the height of bottom face of TG-2 lower flange from the top face of dowel on the mechanical chassis to 3.3 ± 0.05 mm.

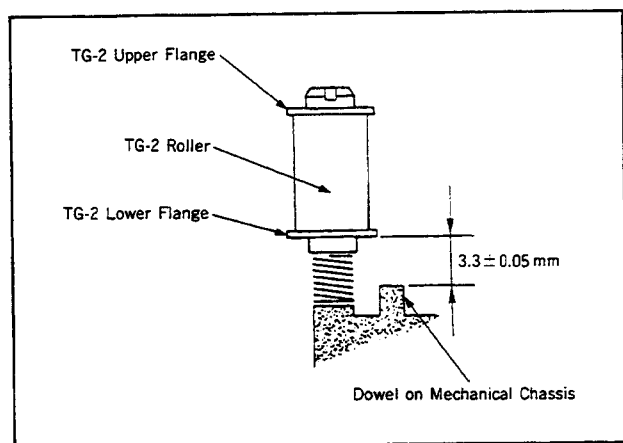


Fig. 38

[Reference]

This A mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7). To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Clockwise
	Lower	Counterclockwise

4-3-2. No. 2 GUIDE (TG-2) ADJUSTMENT (Fig. 39, 40)

- 1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
 - 2) Confirm that the tape is not bent at the lower flange ❷ of the No.2 guide (TG-2) ❶ (Fig. 39). If it is, turn the upper flange ❸ of the No.2 guide (TG-2) clockwise with a screwdriver, lowering it until the tape is straightened.
 - 3) Play back the alignment tape for tracking adjustment.
 - 4) Perform tracking adjustment and tracking fine adjustment as described in sections 4-2.
 - 5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
 - 6) If the waveform is not normal (Fig. 40), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counterclockwise and repeat step 5.
- Repeat steps 5) and 6) until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5).

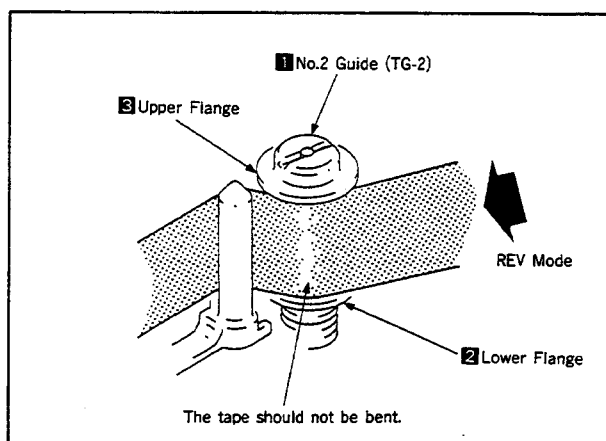


Fig. 39

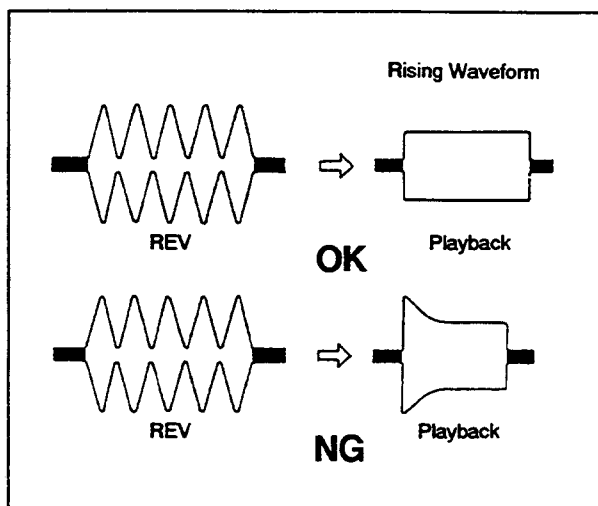


Fig. 40

4-4. No.7 GUIDE (TG-7) ADJUSTMENT (Fig. 41)

Note : This adjustment requires the No. 7 guide adjusting cassette (Fig. 34-B).

- 1) Play back the No.7 guide adjusting cassette and set the REV mode.
 - 2) Confirm that the tape is not bent between the No.6 guide (TG-6) ❶ and the capstan ❷. If it is, turn the height adjusting screw ❹ of the No.7 guide (TG-7) ❸ until the tape is straightened.
 - 3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the height adjusting screw ❹ of the No.7 guide (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the No.7 guide (TG-7) ❸ until bending is within the specification (0.5mm).
- If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3mm or less, adjustment can be considered completed.

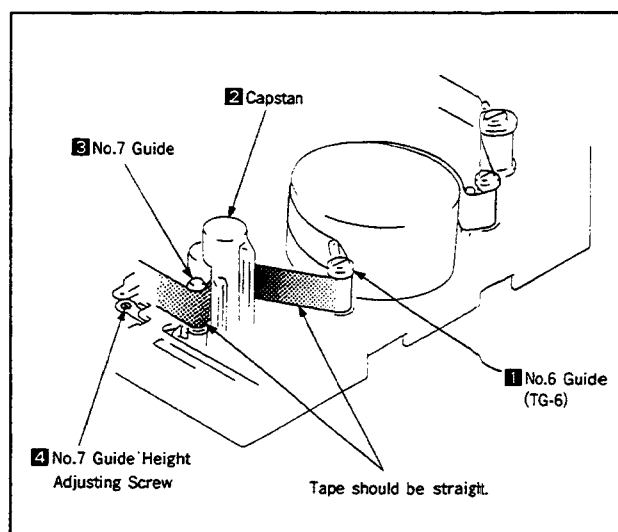


Fig. 41

4-5. CUE AND REV WAVEFORM CHECK (Fig. 42)

- 1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 42). In case pitch is not constant, perform section 4-2. Tracking Fine Adjustment and section 4-4. No.7 Guide Adjustment.
- 2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig. 42). Otherwise, perform section 4-2 Tracking Fine Adjustment.

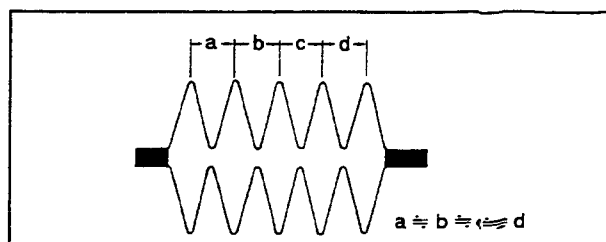


Fig. 42

4-6. CHECK AFTER ADJUSTMENT

4-6-1. TRACKING CHECK

- 1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 43).
- 2) Then, confirm that the minimum amplitude value (E_{MIN}) is 65 % of the maximum value (E_{MAX}) or larger (Fig. 44).
- 3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

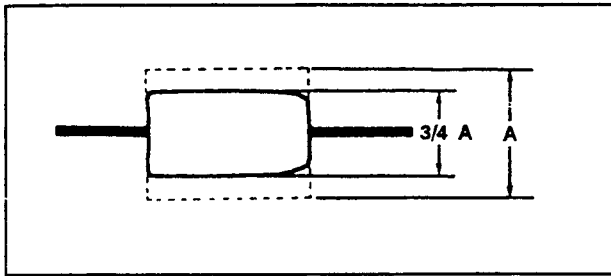


Fig. 43

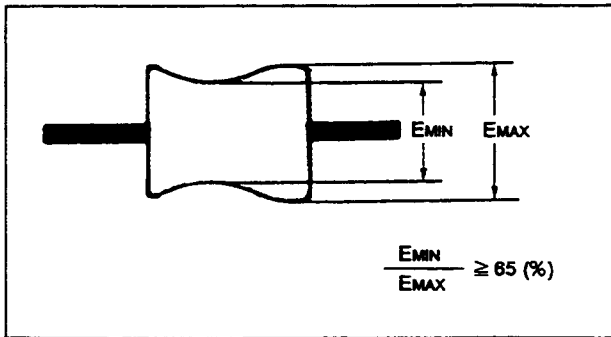


Fig. 44

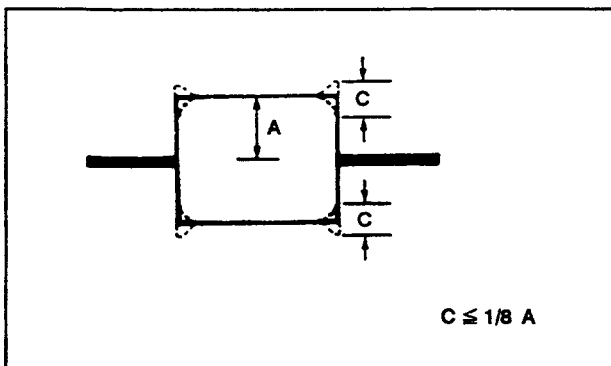


Fig. 45

4-6-2. RISING CHECK (Fig. 46)

- 1) Play back the alignment tape for tracking adjustment.
- 2) Cancel the track shift mode.
- 3) Eject the tape, then load it again.
- 4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
- 5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
- 6) Repeat steps 3) to 5) once more.

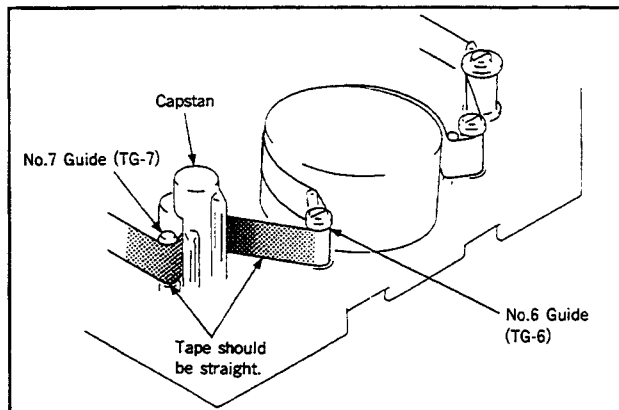


Fig. 46

4-6-3. TAPE PATH CHECK (Fig. 47)

- 1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide, the upper flange of the No. 3 guide, the upper flange of the No. 6 guide and the No. 7 guide upper and lower flanges.
- 2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REV button to set the REV mode.

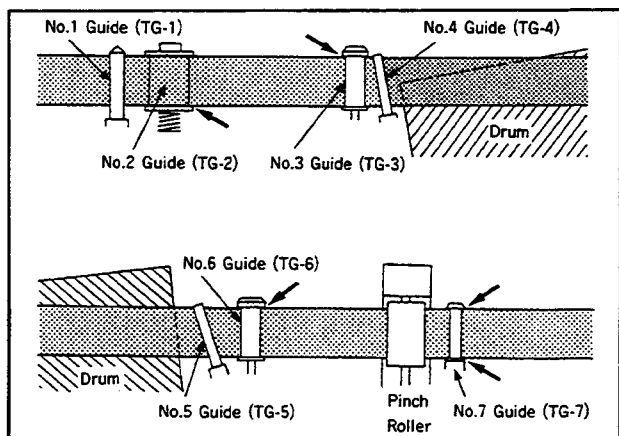


Fig. 47

8mm Video MECHANICAL ADJUSTMENT MANUAL IV

A MECHANISM SUPPLIMENT-2

Video 8

<Connection of Mode Selector IV Conversion Connector>

In use of Mode selector IV conversion connector(J-6082-167-A), there are two different connecting methods depending on the model connected:

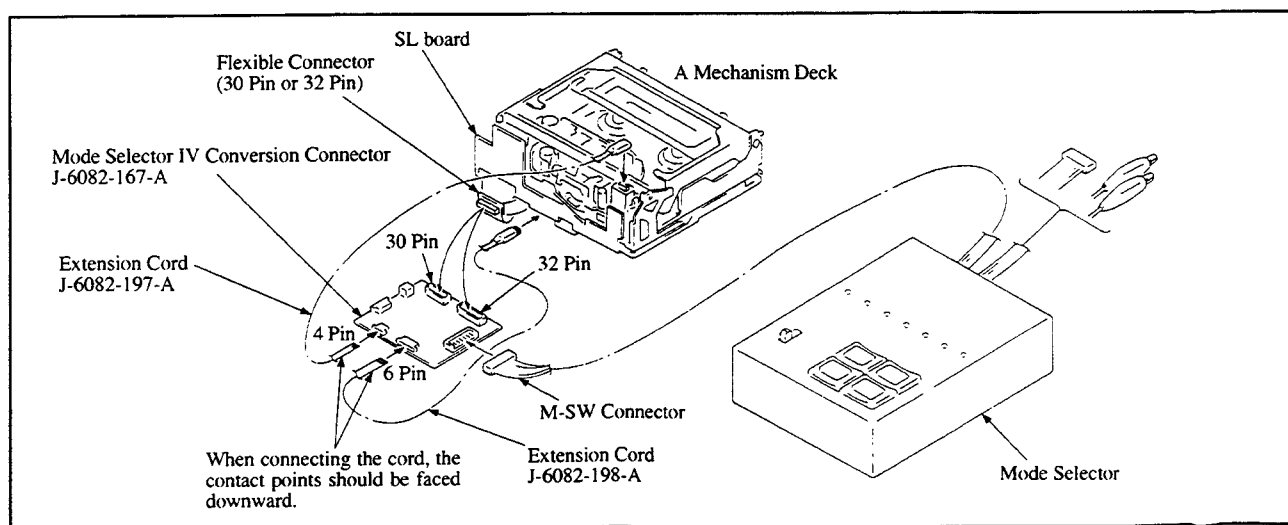
1. CCD-FX series

With the SL board mounted on mechanical deck, connect 30-pin(or 32-pin) connector to 30-pin(or 32-pin) Mode selector IV conversion connector.

CCD-FX300 series, FX400 series, FX500 series
→ 30-pin connector (FP425 or FP600)
CCD-FX700 series → 32-pin connector (FP477)

2. Models other than above

Connect the extension cord (J-6082-197-A) to loading motor 4-pin connector and extension cord (J-6082-198-A) to mode switch 6-pin connector in mechanical deck, then connect the other end of cord to 4-pin and 6-pin connectors of Mode selector IV conversion connector respectively, as shown below.



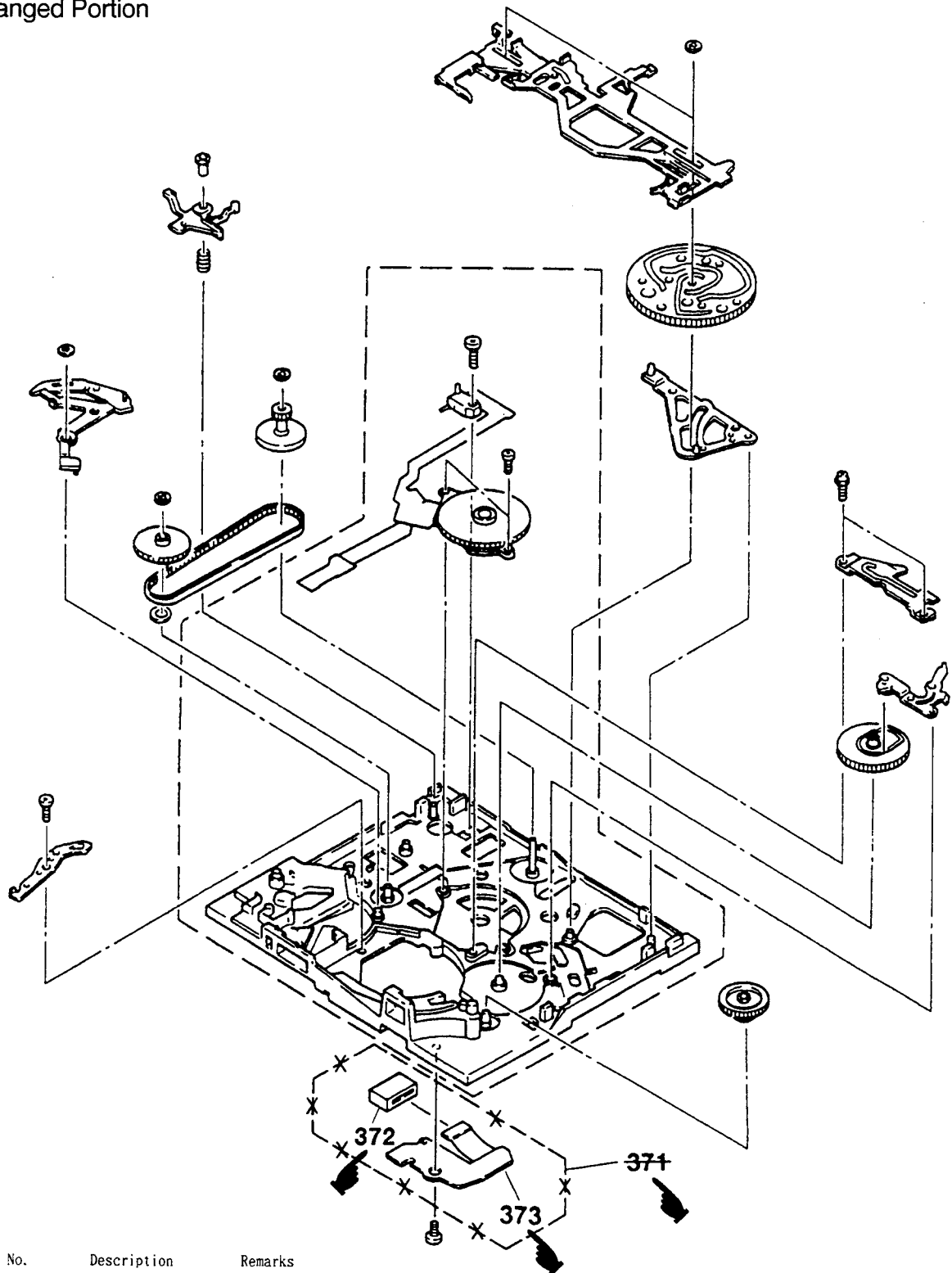
<CORRECTION>

P10. 2-4 Service jigs list

		Incorrect	Correct
J-15	FWD B.T adjusting driver	J-6082- <u>182</u> -A	→ J-6082- <u>187</u> -A

MECHANISM CHASSIS ASSEMBLY (2)

 : Changed Portion



Ref.No.	Part No.	Description	Remarks
371	A 7040-311-A	FP-444 ASSY	
372	1-691-254-13	CONNECTOR, TRANSLATION 10P	
373	1-641-639-13	FP-442 FLEXIBLE BOARD	

